THE DOCK & HARBOUR AUTHORITY

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Editorial.

Extensions at the Port of Genoa.

Port-planning to-day is no mean undertaking and necessitates the anticipation of future trade, and size of vessels to be catered for, and this is the problem that is at present confronting the authorities at Genoa.

For some years past Genoa has felt the shortage of quay space in comparison to the quantity of goods unloaded and loaded, and consideration has been given for some considerable time past to the construction of vast extensions for the purpose of extending the quays so as to obtain a quicker turn round of vessels visiting the port.

These extensions have now been undertaken, and some of them are at present nearing completion.

An illustrated article fully describing the undertakings is given on another page, and also forms the subject matter for this month's supplement.

The Port of Wellington, New Zealand.

The Harbour Board of the Port of Wellington, New Zealand, have just issued an exceedingly well produced booklet to commemorate their jubilee year, the celebration of which took place on January 1st, 1930.

The booklet comprises a history of the growth of the Port of Wellington from its commencement and shows the various phases of constructions and developments which have taken place during the intervening years.

As an illustration of the growth of the port, the following figures may be interesting:—

In 1881 the imports were valued at £1,022,064, whereas in 1929 they were £16,573,862.

Exports in 1881 were £799,039, and in 1929 £14,677,549. Shipping in 1881 was 347,995 tons, whereas in 1929 it had reached the figure of 3,644,487 tons.

Ulverston not a Port Authority.

Ulverston Council has received a check in its advocacy of a scheme for restoring the Ulverston Channel to the Ulverston side of the Leven estuary. The Chairman of the Council, supported by Lord Balniel, M.P., and the Chamber of Shipping of the United Kingdom, have made representations to the Lord Privy Seal and the Unemployments Grants Committee to take some steps or to grant financial assistance to enable the Council to carry out work which would restore the channel to the west side of the Chapel Island and provide shipping facilities to the Ulverston Canal. The Unemployment Grants Committee has now informed the Council that they are advised that the Council has no statutory authority to proceed with the scheme and they regretted that they are unable to entertain an application from the Council for a grant of money from Exchequer funds. This means that before the Unemployment Grants Committee can offer financial assistance it will be necessary for the Council to promote a Bill in Parliament to constitute Ulverston a port authority.

Rating of Dock Warehouses.

Questions concerning the rating of dock warehouses came before the Liverpool Quarter Sessions recently, when an appeal was made against decisions of the Revenue Officer in respect of the East Waterloo Dock, the Wapping Dock, and the Great Howard Street warehouses. In the case of the Stanley Dock and the Albert Dock warehouses, in which the Dock Board were appellants and the Revenue Officer and Assessment Committee respondents, the appeal succeeded and in each case costs followed the decision. The question was whether the Board's warehouses were entitled to de-rating. It was pointed out that the Board was not a profit-earning concern, members served without remuneration and there were no shareholders nor persons to whom they gave up revenue. Every penny that might be received from de-rating would go for the benefit of the port generally in reducing charges. The Recorder said that the question in his mind was whether the words " dock purposes " in the Act covered the purpose for which the hereditaments were used. He thought they did, and the one point to which he had to devote his attention was the point which clearly had been in the minds of the Assessment Committee—what was meant by Sub-section "b" in Section 6. Mr. Lynskey for the Dock Board argued that it was impossible to say that any of the hereditaments were primarily occupied and used for warehousing merchandise not in the course of being transported; that they were used for purposes ancillary to the transport of goods and that the whole of the hereditaments should be de-rated. The Recorder decided in favour of the Dock Board, which should benefit by some thousands of pounds.

Port of Saint John, New Brunswick.

The Acting High Commissioner for Canada in London has just received the Report of the Harbour Commissioners of Saint John, New Brunswick, for the year 1929, a copy of which can be consulted by persons interested at the Canadian Building, Trafalgar Square, London, S.W.1.

During the year the port has experienced a decided increase in arrivals and departures of vessels, the number surpassing all previous records. In the deep-sea class the number was 1,282, or 314 more than in 1928. The Board is proceeding with the construction of two new piers, the completion of which will practically double the present available facilities. The piers are to be each 1,250-ft. in length by 200-ft. in width, one quay wall, 1,250-ft. long, a total berthing space of 6,250-ft., with a depth of 35-ft. below low water; and a grain elevator of three million bushels capacity. The piers will be equipped with modern fire-proof transit sheds, with grain conveyor galleries on each pier. There will be constructed on the piers adequate railway sidings serving the transit sheds and face of piers. Provision will be made for industrial warehouses, which will also be served with railway sidings.

Grain shipments during the first four months of the year were 50 per cent. in excess of those for the corresponding period in 1928. Unfortunately, owing to wheat marketing conditions, there were practically no shipments in November and December, which accounts for the year's total not exceeding that of 1928.

Another Grain Elevator for Kingston, Ontario.

The further development of Kingston, Ontario, as a grain port, following the completion of the new Welland Ship Canal, is indicated in a proposal placed before the Kingston Township Council by a Toronto concern. The interests in question contemplate the erection of a second grain elevator of 2,000,000-bushel capacity just east of the elevator now being constructed at Cataraqui Bay for the Canada Steamship Lines, Limited.

Book Reviews and Catalogues.

Book Reviews.

"Le Port de New York dans son Rôle Econonique "* by Gaston Eyskens, Louvain, Bibliothêque de l'Ecole des Sciences Commercials de l'Université de Louvain, René Fonteyn, Editeur, 1929.

Monsieur Eyskens has pictured the world's first port from the viewpoint of a European economist. It is an excellently documented and thorough study of the commerce, traffic, rates and operation of the port, based on statistics up to and including those for 1928 and on an intimate, personal study on the ground.

The first part describes the nature of the commerce, analysing the ocean, canal, coastal, intercoastal, and passenger traffic; the commercial products handled and their origins; and the economic function of the port in the relation to the movement of these products. The very favourable load factor for both foreign and coastwise commerce is clearly portrayed. The author well points out that for any other country the coastwise domestic commerce would be international.

The second part deals with the cause of the greatness of the port; its heritage from the past; the opening up and growth of the virgin country and its natural outlets; the means of communication with the interior and with the ports of the world; the piers, terminals, warehouses and their equipment; and the organisation, operation and administration of the port. The picture of the development of the port is very happily drawn, showing the various factors effecting it and the particularly rapid progress after the success of the " Clermont " and the introduction of steam to navigation. Much space is given to the settlement and growth of the hinterland with its three natural outlets, the Mississippi River, Great Lakes—St. Lawrence River and the Mohawk—Hudson River; and the result of the construction of the Erie Canal. The interior means of transportation by rail, canal, highway and air are described in detail, and the maritime transportation with world ports is carefully analysed. There is an excellent description of the organisation of the port, its facilities, movement of freight, including the commercial and administrative formalities of export and import operations.

The third part analyses the principal problems of the port, such as railroad net and connections, freight terminals, belt lines and car floating, rational operation of the piers and equipment and terminal charges. A chapter is well devoted to the rate structure, causes, trends, tariff wars and competition between ports. Here Monsieur Eyskens points out the artificiality of the port differentials, which he apparently considers inequitable, but he might have shown that the absorbed free lighterage cost is a tribute the rest of the country pays to benefit New York's export traffic. The final chapter foretells the probable future of the port of New York as affected by the Mississippi River, Hudson Bay, and St. Lawrence Canal routes. In conclusion, he believes that the experience of New York clearly shows that of necessity any port must establish definite plans for development years in advance, that the destiny of ports is best controlled by a public body where economists and engineers have a preponderant influence, and that, in the Port Authority, New York will find new and fertile initiative for logical development.

Monsieur Eyskens deserves commendation for this timely study well done. The bibliography is excellent, most complete, and of great value in itself. This book should be in the library of every port engineer and economist. It is to be hoped that an English translation may soon render the information more generally available.

" The Deterioration of Structures in Sea-Water," edited by John Purser, M.Sc., B.A.I., Assoc. M.Inst. C.E., and H. J. Grose, M.C., B.Sc., published under the authority of H.M. Stationery Office, 1930, price 2s. net.

We have received from the Department of Scientific and Industrial Research a copy of the above, and this is the tenth (interim) report of the Committee of the Institution of Civil Engineers on this subject.

The book is made up of 44 pages, with 4 illustrations, and is sub-divided into ten sections which deal effectively with the deterioration of structures in sea-water in various parts of the world.

The subject, of course, is of too lengthy a nature to go into in detail in the short space at our disposal, but would advise any of our readers who are interested in the subject to obtain a copy from H.M. Stationery Office, Adastral House, Kingsway, London, W.C.2.

" Modern Steel Work," edited by W. R. Gilbert, and published by the British Steel Works Association, Artillery House, Westminster, S.W.1, at the price of 5s.

This book deals with the several uses to which steel work can be adapted, and is composed of 250 pages and profusely illustrated.

In modern construction to-day, steel is naturally the foundation of any new works, and this book describes the use of steel in the construction of buildings, bridges, and several other types of structures for which steel can be used.

This is the second volume of Modern Steel Work, the previous volume having been published in 1927.

" Railway and Seaport Freight Movement," by George Bulkeley, A.M.I.Mech.E., published by Crosby Lockwood & Son, London, at 28s. net.

The author of this book is well known to our readers, as we have had the pleasure of publishing two very interesting articles on the Port of Mombasa, which were written by him.

The task which he undertook in writing this book was a formidable one, but with the experience which he has obtained in his position as Port Manager of the Kenya and Uganda Railways and Harbours, and previously when on the personal staff of the General Manager of the Great Western Railway and as Docks Traffic Superintendent at Swansea, has enabled him to present a most instructive volume on the subject of railway and seaport freight movement.

The book is comprised of 222 pages and 211 illustrations and drawings, together with an introductory note by His Excellency Sir Edward Grigg, K.C.M.G., K.C.V.O., D.S.O., M.C., Governor of Kenya and High Commissioner for Transport in Kenya and Uganda.

The author points out in his preface that his chief purpose in the writing of this book was that it should serve as a text book to junior railway and seaport officers and to students of the science of transportation in universities and technical schools. Also that the book is an attempt to combine railway and seaport traffic operations.

The book is composed of eleven chapters, which deal with the applied science of freight movement; types of freight rolling stock and their distribution; types of ocean and lake freight shipping; railway freight motive power and train resistance; the control of railway movement by signalling devices; the movement of railway freight trains; movement through railway yards and seaport lay-outs; movement through railway freight sheds and seaport transit sheds; the movement of freight between ship and shore; statistics of freight movement; and getting things done.

The author, Mr. George Bulkeley, has gone to great pains in the production of this book, and the collection and compilation of all the data necessary must have taken considerable time and care; and we can thoroughly recommend this book to anyone interested in the subject of railway and seaport freight movement, or to anyone who wishes to acquire the necessary knowledge.

Catalogues.

Ruston-Bucyrus, Ltd.

Messrs. Ruston-Bucyrus, Ltd., the well-known manufacturers of excavating machinery, whose works are situated at Lincoln, have just issued a new catalogue, R.B. 1018, which deals with their excavators.

The catalogue is very well produced and describes very fully the various types of excavators which are supplied by this firm, and also shows the various uses to which they can be adapted.

This firm have also recently issued two circulars, one of which is entitled " A Mighty Link," and which traces the progress of mechanical excavating from the first practical machine and which dates back to 1874. The other circular is an encyclopædia of the various excavators turned out by this firm.

Copies of this catalogue and circulars can be obtained by any of our readers on application to Messrs. Ruston-Bucyrus, Ltd., at Lincoln.

Transporting Machinery and Engineering Co., Ltd.

The Transporting Machinery & Engineering, Co., Ltd., of 76, Victoria Street, Westminster, S.W.1, have just issued a new catalogue which illustrates their new Bleichert Bicable Aerial Ropeways.

The catalogue effectively illustrates the various means to which these ropeways can be utilised, and any of our readers who are interested can obtain copies by writing to the above address.

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* The Port of New York and its Economic Function.

Book Reviews and Catalogues—continued.

Joseph Booth and Bros., Ltd.

Messrs. Joseph Booth & Bros., Ltd., crane and truck manufacturers, of Union Crane Works, Rodley, Leeds, have just issued their catalogue for 1930, and it is exceedingly well produced.

The catalogue gives details and illustrations of various types of cranes, battery trucks and battery locomotives turned out by this firm, and should prove of great use to our readers. Copies of this catalogue can be had from Messrs. Joseph Booth & Bros., Ltd., at the above address.

The British Steel Piling Co., Ltd.

The British Steel Piling, Co., Ltd., of 54a, Parliament Street, London, S.W.1, have recently issued a catalogue illustrating the various types of constructional work for which their steel sheet piling can be used.

The catalogue itself is very interesting and one section is set aside to show the use of steel sheet piling in dock and harbour construction.

Copies of this catalogue can be had from The British Steel Piling, Co., Ltd. at the above address.

Imperial Chemical Industries, Ltd.

The Imperial Chemical Industries of Millbank, London, S.W.1, have just issued a booklet entitled: "The use of explosives in oil and water wells, metal breaking, submarine and demolition work, etc."

The booklet is divided under four different headings, and one of these sections is set apart to submarine blasting, which should therefore prove of use to our readers. This section relates chiefly to the deepening of harbours and channels, though a small section is set aside to the deepening of rivers, etc.

The Imperial Chemical Industries point out that they would be pleased to send copies of this booklet free to any serious enquirer.

The Lea Recorder Co., Ltd.

The Lea Recorder, Co., Ltd., of 28 Deansgate, Manchester, have recently issued a catalogue on the Lea "Cubi-meter" system for measuring coal and other materials in bulk.

The catalogue graphically shows the adaptability of this Cubi-meter for the purpose of weighing coal, ore, grain, etc., and any of readers who are interested can obtain copies from this firm at the above address.

A New Current Meter.

A new current meter has just been placed on the market by Askania-Werke A.G. (Bambergwerk), Kaiserallee 87-88, Berlin-Friedenau, and which has proved of great utility for anybody dealing with tidal research work.

The principal advantages of this electrical recording current meter are: firstly, electric recording of the measurements eliminating errors which are unavoidable by the deviation of the compass when using current meters of the non-electric type; secondly, highest accuracy of the records, and the direction of the currents can be defined up to 1.5 deg. The propeller used with the outfit is particularly calibrated to ascertain velocity of the currents of 0.03 m. per second.

The Port of London Authority.

Port of London Still Growing.

The statistics for the twelve months ended 31st March last, the Port Authority's financial year, show that London's shipping traffic is still expanding. During the twelve months 58,451,685 net reg. tons of shipping used the Port compared with 55,404,591 net reg. tons during the twelve months previous. Thus there was the substantial increase of 3,047,094 net reg. tons.

As emphasising London's supremacy amongst the ports of the United Kingdom, it is interesting to note that during the period under review the combined tonnage that used the next two largest ports (Liverpool and Southampton) exceeded London's total by only 1,724,949 net reg. tons.

Additional tonnage from many parts of the world was recorded; more particularly from India, China, British West Indies, Guiana, British Honduras, Africa, Baltic and North of Europe, U.S.A. and South America. More than 60 per cent. of the total shipping that enters the Port is accommodated in the docks controlled by the Port of London Authority, the balance going to river moorings, riverside manufactories and wharves.

The activity within the Port, apart from the movement of large ships, is clearly shown by the fact that during the year to the end of March last, 152,120 barges with an estimated tonnage of 9,598,630 tons entered and left the Port Authority's docks.

There was also an encouraging increase made in the use of the dry docks. 351 vessels with a gross tonnage of 3,422,888 tons were accommodated compared with 298 vessels of 2,913,047 tons in 1928; an increase of 53 vessels, representing 509,841 tons.

Complete statistics of the tonnage of goods handled in the Port are not available, but the figures of the goods dealt with by the Port Authority form a reliable guide to the trend of trade in the Port. These show an increase of 200,776 tons landed during the year, an advance of 9.7 per cent. Fruit and vegetables, wool, wood, paper, wines and spirits, tobacco and cigars, tea and flour were chiefly responsible for the larger total.

The exports handled by the Port Authority were larger by 11,898 tons, or 1.7 per cent.

Stocks of commodities entrusted to the Authority for warehousing totalled 1,161,856 tons in 1930, an increase of 177,053 tons compared with 1929.

All these figures indicate how the development of industry and consequent growth of population in the South of England are making new demands upon the services of the Port of London and increasing the scope of the great markets it serves.

London's 1,200 Vessels a Week.

During the week ended the 16th May, 1,208 vessels, representing 1,042,846 net registered tons, arrived at or left the Port of London. Of these, 590 (865,776 net registered tons) were from and to colonial and foreign ports and 618 (177,070 net registered tons) were engaged in the coastwise trade.

Eight vessels with meat cargoes arrived in the Port during the week: four from Australia, the "Remuera," "City of Winchester," "Hurunui," and "Demosthenes"; two from New Zealand, "Somerset" and "Middlesex"; and two from South America, the "El Argentino" and "Almeda Star." Together they brought 376,555 carcases of lamb and mutton, 91,418 quarters of beef, quantities of pork and rabbits, and over 30,000 packages of sundries.

During the week ended 23rd May, 1,126 vessels, representing 1,041,842 net registered tons, used the Port of London. Of these, 624 (861,658 net registered tons) were to and from foreign ports and 502 vessels (180,184 net registered tons) were engaged in the coastwise trade.

Eleven vessels arrived with meat cargoes, six from Australia, the "Port Caroline," "Northumberland," "Balranald," "Port Melbourne," "Ceramic" and "Corinthic" and five from South America, the "Highland Princess," "Gothic Star," "Norman Star," "Stuart Star" and "Royal Star." Together they brought 539,000 carcases of lamb and mutton, 111,228 quarters of beef, large quantities of pork and 83,400 packages of sundries.

Ivory from Siberia.

The largest shipment of Russian Ivory ever received in this country has just arrived at the Port of London Authority's Warehouse, London Dock. It weighs 11 tons and some of the tusks are 10-ft. in length and 250-lbs. in weight. It is of the Mammoth period and gives the impression of having been recovered from riverbeds in Siberia.

Strengthening Canal Banks.

In anticipation of Government approval and assistance being accorded to the Grand Union Canal's £500,000 development scheme, experiments to discover the best and most economical method of strengthening the weak places along the banks of the canal are being undertaken.

Traffic has increased considerably within the last twelve months, and the advent of a constantly increasing number of motor-boats of larger carrying capacity has resulted in an aggravation of the bank erosion, which is a normal feature of busy artificial waterways. As the canal is 240 miles long, the cost of reinforcement is necessarily heavy.

The problem confronting the Grand Union Company's engineers, in view of the extensive developments now contemplated, is to discover by test and experiment the best method of counteracting erosion. Walling of different types has been built at many points along the canal, and the authorities are hopeful that, by the time the new scheme is in operation, they will have found a permanent method of protecting the canal banks.

Opening of the Tilbury Passenger Landing Stage by the Prime Minister.

Speech by Lord Ritchie, Chairman of the Port of London Authority.

LORD RITCHIE returned thanks and said that the credit for whatever the Authority had achieved was due in a large measure to the fact that they had in Mr. Owen a most able General Manager with a genius for organisation. He was supported by highly efficient officers and by a loyal staff. Credit was also due to the body of dock labourers with whom the Authority was on the best of terms, many of whom were highly skilled and all of whom were generously remunerated.

Referring to the Port, it was refreshing in times of depression that there had been a gradual increase in imports handled by the Authority during the year ended 31st March and a small increase in exports. The shipping figures for the same year were a record, amounting to 57½ million tons against 38 million tons when the Authority came into existence 21 years ago.

A great deal was heard nowadays of rationalization. So far as he could make out the only new thing about rationalization was its name. The Port of London Authority had been gradually rationalizing for 21 years. The Port of London Act of 1908 was itself an Act of rationalization. It provided for the amalgamation under the control of the Authority of the various Dock Companies which had existed up to that date and which had spent many years previously in trying more or less successfully to cut one another's throats. Incidentally they almost succeeded in cutting the throat of the Port of London. The Port was threatened with obsolesence owing to the fact that the Companies had not the necessary financial resources to carry out improvements and extensions which were needed if the Port was to retain its position amongst the great ports of the world.

The Port of London Act placed the Authority in a position to raise the necessary funds and in the course of 21 years the Authority had spent nearly 20 millions in carrying out improvements. Of these 20 millions, 16 have been spent on major capital works on which the Authority received financial assistance from the Government on 5 millions in the shape of one-half interest on that sum for a period of 15 years. Four millions had been spent on re-equipment and works of improvement of a minor character.

We claim that the Port is now in a position of high efficiency and will bear most favourable comparison with the other ports of the world. The times through which shipowners and traders have been passing during recent years spurred the Authority to expedite and intensify rationalization and they have effected economies which have enabled them to reduce the charges and dues levied on goods and shipping by a sum not far short of £400,000. The Authority continues to pursue this policy and it is hoped that one of these days it may be possible to make further reductions.

I am reminded by the presence of the Lord Privy Seal that some few months ago I undertook that a review of the Authority's undertaking should be carried out to see whether it was possible economically to undertake further large capital works to provide employment. That investigation was completed some little time ago and I fear that it must have been a disappointment to the Lord Privy Seal when we reported that we found that the requirements of the Port were provided for so far ahead that it was impossible to undertake any further large works on the terms offered by the Government. That is the position to-day.

I will not detain you by entering into a detailed description of the Landing Stage, but I would like to say a few words about those who have been most directly concerned with its provision.

It was Lord Devonport, I think, who originated the proposal soon after the Authority came into existence. There were delays, including of course the war, before it could be undertaken and it was only possible to commence the work about three years ago. We have been associated all through the work with the London, Midland and Scottish Railway Company and their predecessors, the Midland Railway, without whose invaluable co-operation the construction of the Landing Stage would not have been possible. They have spent a large sum on providing a new and imposing station and in providing facilities, as you will see on leaving this hall. The Stage was designed by our old friend, Mr. Frederick Palmer, whom we are so proud to have as our Consulting Engineer and whose genius is written all over the Port. The constructional works were carried out to our entire satisfaction by the Cleveland Bridge and Engineering Company and by Messrs. Sir Robert McAlpine and Sons. This baggage hall was designed by our architect, Sir Edwin Cooper.

I do not know of course what you may think of it, but at the risk of your thinking that I boast of something for which we are in part responsible, I say that I think it is superb, and I am glad to have the opportunity of thanking publicly Sir Edwin Cooper for providing us with a building which is not only a credit to the Authority but to the whole Port.

The construction was carried out by Messrs. Mowlem and Company in their usual highly satisfactory manner.

I hope I have said enough to satisfy you that the fortunes of the Port of London are in good hands. I hope, too, that you may carry away with you pleasant recollections of your day on the River and that you will take an abiding interest in your great Port.

Danish, Russian and Polish Port and Harbour Notes.

Danish Ports.

Aarhus.

The Harbour Board has decided to dredge the channel, leading to the southern part of the harbour, to a depth of 10½ metres. This depth satisfies the international specifications for first-class harbours. The dredging amounts to about 160,000 cubic metres and is estimated to cost about Kr.200,000.

Copenhagen.

The Burmeister Wain's Shipbuilding Company have completed a large new reinforced concrete bedding on Refshalesen. The capacity of the bedding is 12,000 tons, and it has already come into use for the building of a large motor ship.

Lokken.

The mole at Lokken, on the north coast of Jutland, which is being built as a base for fishing vessels and which has been under construction for some years, will probably be completed this summer.

Russian Harbours.

Murmansk.

One hundred and forty-three ships arrived at Murmansk last year, compared with 110 the year before. Of these, 49 were Russian, 42 Norwegian, 17 English, 12 German, 8 Dutch and 7 Danish.

Archangel.

At Archangel 520 ships arrived last year, against 448 in 1928. There were 233 Norwegian ships, 79 English, 52 Dutch, 47 Swedish, 34 Russian, 30 German and 21 Danish.

Petrograd.

In 1929 1,332 ships arrived at Petrograd, against 927 in 1928. Of these, 436 were German, 229 Danish, 189 Prussian, 150 Norwegian, 89 Swedish and 87 English.

Polish Harbours.

Gdynia.

With the completion of the railroad from Kattowitz in Schlesia, to Gdynia, Poland, total foreign traffic can be handled from this harbour.

In order to be able to take care of all future traffic a four years construction programme has been started, terminating April 1st, 1934. Besides the work already contemplated, the next few years will probably call for dredging of the outer harbour between the breakwater and the beach and construction of a 4 km. canal back in the adjoining territory.

A French-Polish group is constructing the harbour under supervision of the Polish minister for industry and trade, who have also drawn up the plans for the extension. Other works are being done by the harbour commission and local contractors, for instance, warehouses, cranes, buildings, etc.

In order to increase the traffic at Gdynia, Poland has commenced to build up a commercial fleet, and has already about 30 ships. Some of these are going on regular routes to the neighbouring countries. Recently a Polish line was opened to Canada and U.S.A. to take care of immigration. Poland now receives most of its supply of coffee, cotton, tobacco, rice, etc., through Gdynia instead of as earlier via Hamburg, Bremen or Danzig.

Also the harbour of Gdynia is of growing importance for industry. The Ford Motor Company consider building automobile factories and a shipbuilding company has started a plant there.

Notes of the Month.

Piling on the Lower Elbe.

Pile work in the fairway on the Lower Elbe between Freiburg and Krautsand commenced on May 11th. In connection with the work series of between 4 to 6 pontoon boats will be stretched across the fairway of the Elbe at distances of about 200 metres apart. These vessels will be anchored and carry, in addition to the anchor signal required by para. 20 of the Seewasserstrassenordnung, the official flag of the Reich marine authority. Shipping is requested to adopt necessary precautionary measures when passing vessels engaged in the work.

Opening of Navigation at Montreal.

On April 21st the first trans-Atlantic ship entered the Port of Montreal during the 1930 navigation season. The vessel in question was the s.s. "Wentworth," which arrived from Durban, South Africa, with a cargo of 7,196 tons of Natal sugar for refining in Canada. The steamer will probably be the first to take out a grain cargo from Montreal this year.

The arrival of the first deep-sea vessel occurred simultaneously with the general movement of traffic on the Great Lakes concurrently also with the opening of navigation on a section of the new Welland Ship Canal, the locks of the northern portion being thrown open for traffic on April 21st. The new section will be operated for a few weeks in conjunction with part of the old canal, but the entire canal will be available for use by the official opening date on Dominion Day next (July 1st).

Marconi Equipment Ordered for Greek Islands.

The historic isles of Greece are to be linked up with Athens and the mainland by wireless telephone and telegraph services, for which the Greek Government has ordered equipment from Marconi's Wireless Telegraph Company.

Three of the latest type Marconi stations for duplex telephony and high-speed telegraphy are to be erected, one in or near Athens, with duplicate plant, one on the island of Crete, and the other on Chios.

A similar Marconi station, but working on telegraphy only, is also to be installed to exchange messages with ships. The equipment of this station will include a Marconi Wireless Direction Finder for the assistance of navigation.

New Type of Inland Waterway Craft launched at Montreal.

There was recently launched at the shipbuilding yards of Canadian Vickers, Limited, at Montreal, a new steel tow barge, "Redstar," which is the first of five similar vessels to be placed in the Prescott-Montreal grain service. The vessel has been built for the Red Barge Lines, Limited, and the provision of these tow vessels of the maximum size capable of negotiating the locks along the St. Lawrence River, is a direct development of the completion of the Welland Ship Canal this year and the building by the Canadian Government at Prescott of a new grain terminal.

The development of Prescott as a junction for shipping in the grain trade has made such craft as the "Redstar" a useful addition to the inland transportation system. At Prescott, the large grain vessels from Fort William, Port Arthur and other Upper Great Lakes ports, enabled to reach the St. Lawrence this year for the first time owing to the completion of the Welland Ship Canal, will discharge their cargoes into the new large elevator now under construction there. Tow barges such as the "Redstar" are seen to be an economical solution of the problem of trans-shipping grain the remaining distance to the port of Montreal.

The "Redstar," rated as class A.1 at Lloyd's, has been built without propelling equipment to specifications by the naval architects, Messrs. Lambert and German of Montreal. With a length of 256-ft., moulded breadth of 43½-ft. and depth of 15-ft., the new vessel provides hold space of 206-ft. in length and it will carry 113,000 bushels of wheat on a draught of 14-ft., which is the depth of navigation in the St. Lawrence canals. This is a larger cargo than can at present be brought down from Port Colborne (on Lake Erie) by the self-propelled craft passing through the old Welland Canal, across Lake Ontario and down the St. Lawrence. After the new Welland Ship Canal opens on July 1st, however, the 500,000-bushel vessels of the Upper Lakes will no longer have to discharge their cargoes at Port Colborne, but will be enabled to continue down to Kingston and Prescott. The remaining distance from the new transfer point at Prescott to Montreal is not much over 100 miles. It is on this remaining link through the St. Lawrence River and canals that a future is seen for the new barge transport.

Port of Vancouver, British Columbia.

A Bill was passed in the Dominion Parliament at Ottawa last year providing for the loan of $10,000,000 to the Vancouver Harbour Commissioners for the improvement of shipping facilities at that port. These improvements are to take the form of a new ocean pier, water front cold storage plant, fish storage and fish wharf, and great additions to three terminal grain elevators, the latter to add 5,500,000 bushels to the port's grain storage facilities. The preparation of the plans is being pressed forward and much of the work is to proceed this year.

Work on the additional storage plans at the public elevators will start almost immediately, so that the facilities will be ready for the new grain crop next fall. The additions will give the port a storage capacity of 19,885,000 bushels. Plans submitted to Ottawa contemplate the enlargement by 2,000,000 bushels of elevator No. 1, now under lease to the James Stewart grain interests. Negotiations are also in progress with the Alberta Pool Elevator Company for an addition of at least 1,000,000 bushels storage to No. 2 elevator, under lease to that Company. The elevator No. 3, leased to the United Grain Growers, Ltd., is to be enlarged by 2,500,000 bushels.

Approximately $1,500,000 is to be spent at the water front cold storage plant, fish storage and fish wharf. Plans are also in course of preparation for the proposed new pier adjacent to Ballantyne Pier. The fill for the foundation of the pier is nearly completed. This development will entail an expenditure of between $3,000,000 and $4,000,000.

New Swing-bridge in Bremerhaven Harbour Works.

The swing bridge built by the Bremen State in the further extension of the Bremerhaven harbour works was opened for service on the 5th May. The bridge carries double railway lines and a double road with footpath over the connecting canal between the present Bremerhaven harbour and docks and the Nordschleuse, which is under construction; it thus connects the passenger installations on the Columbus quay and Kaiser and the sheds on the west side of the connecting harbour with the mainland by means of railway and road.

The bridge is approximately 115 metres long and 19 metres wide. Total weight is more than 2,700 tons. It is claimed that it is the heaviest swing bridge in the world.

The so-called building steel St.52 was used in the construction. The main machinery is situated under the short arm of the bridge which is 35 metres in length, and can enable the bridge to be turned in or out within three minutes. The driving power is electro-motor. The electric switch installations are placed in a switch house beside the bridge. In order to withstand the strain the bridge has been reinforced at its turning points as well as at both ends by means of stays. While the main abutments rest on wooden piles, the middle pile, which bears the whole weight of the bridge when it is being turned, is a massive lump of ferro-concrete sunk down into the sand. The measurements of this concrete are 18 by 18 metres at the base and approximately 20 metres in height. The bridge was completed in the short time of 15 months from the moment of ramming the first foundation pile to the opening of the bridge, in spite of the loss of one and a half months due to the severe winter of 1928 and 1929.

Hero Bridge Promoters Seek Protection.

The Hero-Hackett Bridge, to span the Mississippi River from the Robin Street wharf to Gretna, now seem to be depended upon the municipal authorities of New Orleans passing ordinances banning free bridges and free ferries for a period of ten years.

If these ordinances are adopted, say the promoters of the big enterprise, the last obstacle to the building of the bridge will have been removed, and work will start immediately.

The bridge promoters maintain that the exclusive right for ten years might give them a return on their investment, but with free ferries or bridges, their venture would prove a loss.

The Municipality seemed inclined to grant the request of the Hero-Hackett interests, and Commissioner of Public Utilities W. T. Hall, introduced the necessary ordinance. Mr. Hall, in introducing the ordinance, said that there was nothing in it that would militate against the best interests of the community.

Protests against the ordinance were offered by F. B. Norman, of Algiers and Clyde Farr, representing a group of Lower Coast residents. They held that it was the policy of the State and municipalities to build free ferries and bridges.

The ordinance took its regular course and was put back for one week.

The Hero-Hackett Bridge would give New Orleans a span for the broad Mississippi right in the centre of the Harbour. The bridge is to have no approaches, but is to be reached by a spiral way.

Italian Harbour Affairs.

THE Istituto Centrale di Statistica has published its April Bulletin, containing the figures concerning shipping at Italian ports during the first quarter of 1930, and which enables one to obtain a better idea of the development of trade in Italy than the monthly statistics which have been published up to the present. According to these statistics, during the period from January to March, 1930, 104,895 ships representing 37,336,731 net registered tons arrived and cleared from Italian ports carrying 9,086,222 tons of goods and 1,740,708 passengers, against 101,003 ships, 35,439,868 net registered tons, 8,559,415 tons of goods and 1,713,258 passengers during the corresponding period of 1929. In this connection it may be added that the total imports reached, during the first quarter of 1930, 6,822,030 tons, against 6,417,631 tons in 1929, and the exports 2,264,192 tons against 2,141,784 tons.

Shipping is showing an increase, and in order to obtain a better idea of this development, it may be interesting to consider that the total volume of goods carried by Italian steamers and motor ships from overseas markets has grown from 1,849,289 tons on March 30th, 1929, to 2,214,049 tons on March 30th, 1930, the goods carried by foreign ships from 2,347,369 tons to 2,440,858 tons; while in connection with exports to overseas markets the Italian mercantile marine has shown an increase of about 110,000 tons, while foreign flags have shown a decline of 40,000 tons.

A better idea of the situation can be had if one examines the following figures concerning the main items of goods imported at the chief Italian ports during the period under review:—

	Coal. Tons.	Wheat. Tons.	Cotton. Tons.	Raw Materials. Tons.
Genoa	745,740	171,789	48,245	92,369
Savona	376,529	3,186	—	22,972
Leghorn ...	243,824	10,718	991	3,307
Civitavecchia ...	220,733	10,733	98	3,534
Naples	200,206	54,189	5,312	3,840
Palermo ...	123,936	5,211	—	180
Catania ...	28,934	9,025	—	205
Trieste ...	36,260	1,335	5,768	76
Fiume	24,191	—	31	3,136
Venice	302,448	25,754	14,585	2,686
Ancona	119,811	6,548	25	706
Bari	30,547	4,975	—	1,658

Furthermore, in order to get an idea of the distribution of Italian maritime trade the following figures should be taken into consideration:—

	January March	Ships arrived and Cleared No.	N.R.T.	Goods Arrived. Tons.	Goods Cleared. Tons.
Savona	1930	514	592,661	453,068	25,950
	1929	477	452,477	402,563	25,668
Genoa	1930	2,448	4,826,055	1,609,071	250,331
	1929	2,462	4,895,324	1,711,726	267,127
Leghorn	1930	1,686	1,756,889	368,070	106,051
	1929	1,618	1,541,464	358,022	82,726
Civitavecchia ...	1930	669	952,025	188,198	16,326
	1929	588	692,166	195,922	24,487
Naples	1930	3,935	4,859,363	429,726	79,240
	1929	3,910	4,999,036	431,686	78,200
Brindisi	1930	590	1,051,864	24,469	3,457
	1929	551	900,988	9,168	3,116
Bari	1930	782	667,632	69,906	17,201
	1929	824	652,534	86,094	17,842
Ancona	1930	1,373	631,741	180,797	11,411
	1929	936	538,131	96,814	18,897
Venice	1930	1,535	1,822,999	528,823	101,488
	1929	1,466	1,759,725	489,330	99,310
Trieste	1930	6,944	2,445,136	464,794	222,309
	1929	6,149	2,302,920	522,990	201,108
Fiume	1930	2,679	1,260,364	113,902	100,247
	1929	2,451	1,075,437	101,019	72,005
Messina	1930	1,362	1,007,026	83,666	31,534
	1929	1,376	910,876	92,468	29,005
Catania	1930	1,262	983,257	105,324	54,153
	1929	1,192	936,886	115,023	53,204
Siracusa ...	1930	298	35,428	6,843	2,513
	1929	614	736,831	23,975	10,155
Palermo	1930	1,505	1,537,890	147,232	55,228
	1929	1,555	1,523,374	138,088	39,519
Cagliari	1930	459	429,864	61,577	59,359
	1929	519	391,553	59,273	64,665

With few exceptions, such as imports into Genoa, Naples, Bari, Trieste, Siracusa, etc., and exports at some of the small ports, maritime trade is showing an increase, particularly at Adriatic ports, but, on the other hand, it should be taken into consideration that the development of railway traffic for private account has shown a decrease, which is shown by the following figures:—

	Volume of Shipments accepted by Italian railways at various ports. 1930 Tons	1929 Tons
March	1,061,175	1,283,156
February	953,016	1,089,378
January	1,071,031	1,186,022
	3,085,222	3,558,556

This means that a lot of the goods arrived at various ports have not been re-exported to the hinterland. Railway trade with foreign countries has shown a general decrease during the first quarter of this year, as is shown by the following figures:—

	January—March 1930 Tons.	1929 Tons.
Imports by Rail into Italy ...	1,560,506	1,659,085
Exports by rail from Italy ...	624,566	625,357

It is evident, therefore, that maritime trade has been the most important part of trade at Italian ports during the first part of this year.

The situation at Italian ports has been considered in the Italian Parliament, while the Mercantile Marine Bill has been discussed. Honourable Banelli, member for Trieste in the House of Parliament, pointed out that it is always necessary to attract increasing trade towards Italian ports, and that in connection with foreign transit trade, steps should be taken to increase the speed of shipments reducing to the minimum, through a sound policy of tariffs, hindrances to this trade. In this regard Honourable Banelli referred to the fact that, thanks to the low tariffs, Marseilles represents an active competitor for Italian ports on the Levant markets. Honourable Barni, representative for Genoa, pointed out in connection with the construction of the third large dry dock at Genoa, that this work is not undertaken with the funds of the Treasury or the Consorzio, but with the funds of a private company. If harbour extensions at Genoa—said Honourable Barni—have not yet reached the development attained at other large European ports, this is entirely due to the higher cost of work. With reference to the reduction of unloading charges, Honourable Barni has pointed ou that the problem has also to be considered from the point of view that work is not always uninterrupted, and that sometimes bad weather forces dockers to remain idle. Signor Ciardi highly complimented the Minister for Communications for his decision to put labour under the control of harbour masters, and referred to the fact that the Italian State Railway Administration has been able to spare, during the fiscal year 1928-29, 15 million lire, thanks to the new harbour labour organisation.

The Executive Board of the Provveditorato del Porto at Venice has authorized the undertaking of new improvements to the value of 4 million lire. In connection with the progress of dredging works undertaken at Venice, it may be noted that during the past few weeks the s.s. "Rotterdam" of the Rotterdamsche Lloyd has entered the St. Mark's Bassin in the lagoon. She is the largest ship which has ever entered the lagoon.

The question of attracting tonnage to Italian ports for the object of supplying bunkers is seriously taken into consideration in Italian business quarters. In 1929 Senator Ricci, the former Lord Mayor of Genoa, who is connected with the coal import business at Genoa, has raised the question at the Italian Senate. Now the Confederazione Generale del Commercio has taken up the question, and has appointed a special committee with the object of studying the problem. The committee is presided over by Comm. Boccadifuoco, who is connected with the coal trade in Sicily. A statement has been issued in regard to the first meeting of the committee, pointing out that it has learned with satisfaction that the Ministry for Communications is examining the initiatives to be taken to develop this important branch of maritime activity. The statement refers to the necessity that the greatest efficiency should be maintained in this regard in order to reduce the cost of bunkering. It is understood that the opportunity is being considered of fitting South Italian ports with mechanical bunkering facilities in order to attract tonnage bound from the West to the East and vice versa.

In connection with previous reports regarding the development of the Italian mechanical unloading facilities industry, it is stated that the Stabilimento Tecnico Triestino at Trieste has just secured an order for two electric coal elevators from the Salonika Harbour Administration, and has now on hand the following orders:—1 electric crane of 10/20 tons for the Companhia Nacional de Navegacao Costeira of Rio de Janeiro; four electric coal elevators of 5 tons for the port of Savona; four electric cranes of 5 tons for the port of Naples, etc.

Efforts are being made in Italian business circles to increase the steam ship connection between Italian ports and overseas markets, and reports have been circulated to the effect that the Italian Cabinet has approved an increase of loans to the Società di Navigazione Adria for their Italian ports—North Europe service, and to the Navigazione Libera Triestina for their South African, the North American and the Belgian Congo

Italian Harbour Affairs—continued.

service. In connection with the Navigazione Libera Triestina it is confirmed that they are to start the new service to California during June, while other improvements are being considered. The steamers to the Belgian Congo are shipping considerable quantities of building lumber at Adriatic ports for Algiers, etc. The Compagnia Genavese di Navigazione has started a new passenger and freight service from Genoa to the Black Sea, while the Lloyd Triestino is replacing the motor liners "Esquilino," "Viminale," "Romolo" and "Remo" on the Far Eastern service with ships such as the "Monte Piana," "Col di Lana," etc., with larger freight-carrying facilities, and it is reported that an increase of steamship connections between Italy and the Far East might be expected in the course of the next few months.

Belfast Port Affairs.

Annual Meeting of the Commissioners.

AT the adjourned annual meeting of the Belfast Harbour Commissioners, Mr. R. E. Herdman, D.L., presiding, the report of the auditors and chartered accountants was submitted. According to the report the total receipts for 1929 were £302,632 19s. 10d., being an increase over the previous year of £25,821 15s. 6d. The payments were £237,814 1s. 3d., an increase of £7,885 11s., leaving a gross surplus of £64,818 13s. 7d. From the surplus there fell to be deducted several items of depreciation, totalling £9,018 12s. 7d., and the annual statutory contribution, £10,738 16s. 3d. to the sinking fund.

This left a balance of £45,061 4s. 9d., which was appropriated as follows:—

£6,000 to augment the Finance Fund, now standing at £22,104 3s. 10d.;

£15,000 to the statutory borrowing and spending account;

£24,061 4s. 9d. transferred to unappropriated receipts account. The amount of the transfer last year was £12,503 18s.

The Right Hon. H. N. Pollock, in moving the adoption of the report, said he was sure the ratepayers of Belfast would be extremely gratified to learn of the very favourable report. He particularly drew attention to the depreciation that was being made for the sinking fund which was one of the most desirable features of any enterprise.

The Right Hon. J. Milne Barbour seconded the motion, which was adopted.

Changes in the Staff.

At a meeting of the Belfast Harbour Commissioners on the 6th May it was announced that in view of the health of Mr. T. S. Gilbert, the Harbour Engineer, the Board had decided to accede to his request to retire from that position to appoint him consulting engineer in charge of the new works.

In this capacity Mr. Gilbert will be responsible for the execution of the new dock schemes and incidental works and of such works as the Board may assign to him, while of course he will advise generally on questions of engineering when required.

He has been in the service of the Board for 37 years. The members of the Board, on the motion of the Chairman, seconded by Mr. Davidson, passed a resolution expressing regret at the necessity of partially relinquishing Mr. Gilbert's services and their appreciation of his valuable services to the Trust in the capacity of Harbour Engineer.

Mr. William Young Chamberlain, the Chief Assistant Engineer, has been appointed Acting Chief Engineer and will be responsible for the general maintenance of the harbour and any new works or alterations other than those assigned to the Consulting Engineer.

Mr. Chamberlain, who is an Ulsterman, has been associated with the Harbour Trust for 41 years. He served his time in the harbour engineering department and on the termination of his apprenticeship was appointed an assistant. In 1914, when Mr. Gilbert was appointed Chief Engineer, Mr. Chamberlain was promoted to the position of his chief assistant and acted in that capacity since. Mr. Chamberlain has a ready pen and has contributed a number of articles on engineering subjects to *The Dock and Harbour Authority* and other journals.

Belfast Port Traffic.

The following report from the Belfast Harbour Master was read at the last meeting of the Belfast Harbour Board:—436 vessels arrived at the port during the period extending from the 13th April to the 3rd May as follows:—

Coastwise and cross-channel, 397; foreign 22; non-trading, 17.

The total tonnage of the vessels which arrived from the 1st January to the 3rd May was as follows:—

Coastwise and cross-channel, 800,521, an increase of 72,225.

Foreign, 198,879, an increase of 3,317.

Non-trading, 43,783, an increase of 16,163.

Total, 1,133,183, an increase of 91,705.

Trade of the Port.

The tonnage returns issued by the Belfast Harbour Commissioners for the first three months of 1930 show an increase of 78,000 tons, a very gratifying proof of the continued prosperity of the port. The figures of exports and imports as usual show considerable fluctuations. A decrease of 22,000 tons—nearly six per cent.—on coal imports is to some extent explained by the uncertain position of the coal industry and to the fact that merchants have kept their stocks low.

Exports of linen goods showed a very slight increase upon the figures for the same period of 1929, the total being 8,834 tons. The same comparison applies to linen yarn exports, which amounted to 1,186 tons, while the amount of yarn imported was 1,111 tons, a slight fall.

Machinery exports were 4,460 tons, a ten per cent. increase, while there was a rise of twelve per cent. in the quantity of Belfast-manufactured tobacco sent out through the harbour.

There was a remarkable drop in the potato exports. Only 10,509 tons were sent out during the three months, against 41,120 tons in the same quarter of 1929. These figures indicate that Irish potatoes have been a drug on the British markets since the beginning of the year.

The cross-channel cattle trade has been more active, the total of 25,395 head being exported, showing an increase of no less than 35 per cent. There was, however, almost a corresponding decrease in the number of sheep sent out, while pigs were about the same, a total of 4,470.

Less bacon was exported by 30 per cent., a fact no doubt due to the unsettled state of the market and the increasing competition of foreign bacon. Butter exports during the first quarter of the year have as a rule been small in the port, but the quantity sent away since the beginning of the year was double that of the corresponding quarter of 1929; so that the efforts being made to make this branch of the farming industry an all-the-year one are meeting with success. There was a slight drop in the imports of butter, the quantity being 1,163 tons, while 950 tons of margarine were also imported, a substantial increase.

Paper exports rose slightly, the total being 2,135 tons, while felt roofing was exactly the same as the previous year, 1,862 tons. There was a fall in the export of whisky, 836 tons being sent away. The import of wheat, 11,255 tons, showed a considerable increase. 15,697 tons of flour were brought in, the same as before, and there was an increase in the import of maize of about ten per cent., the total being 75,379 tons.

There was an increase of almost 20 per cent. in the import of motor spirit, 15,360 tons being landed; while 12,318 tons of fuel oil were imported and 8,819 tons of paraffin, both of these showing a substantial rise.

Steam-driven Lighters Wanted for Spain.

The Commercial Secretary, His Majesty's Embassy, Madrid, reports that the Aviles Port Authorities are calling for tenders, to be presented in Spain by the 3rd July, 1930, for the supply of two steam-driven lighters with a cargo capacity of 200 cubic metres.

Firms desirous of offering British-built lighters can obtain further particulars of this call for tenders upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Reference number A.X. 9609 should be quoted.

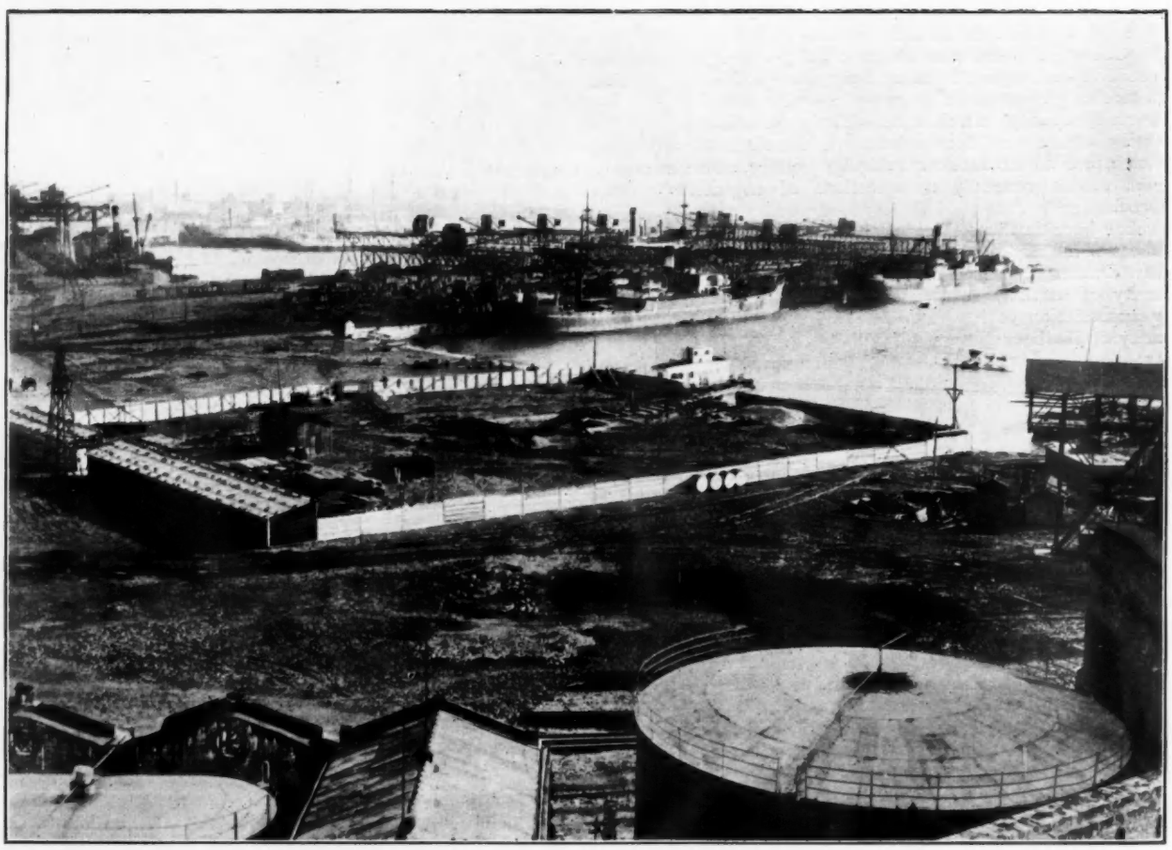
Shallow-draught Passenger-carrying Motor Launches Wanted for Chile.

The Commercial Secretary, His Majesty's Legation, Santiago, has reported an opening for the sale in Chile of shallow draft motor launches capable of carrying from 80/100 passengers and with a speed of upwards of 16 nautical miles per hour.

Firms desirous of offering British-built boats can obtain further particulars upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Reference number AX.9566 should be quoted.

The Port of Genoa.

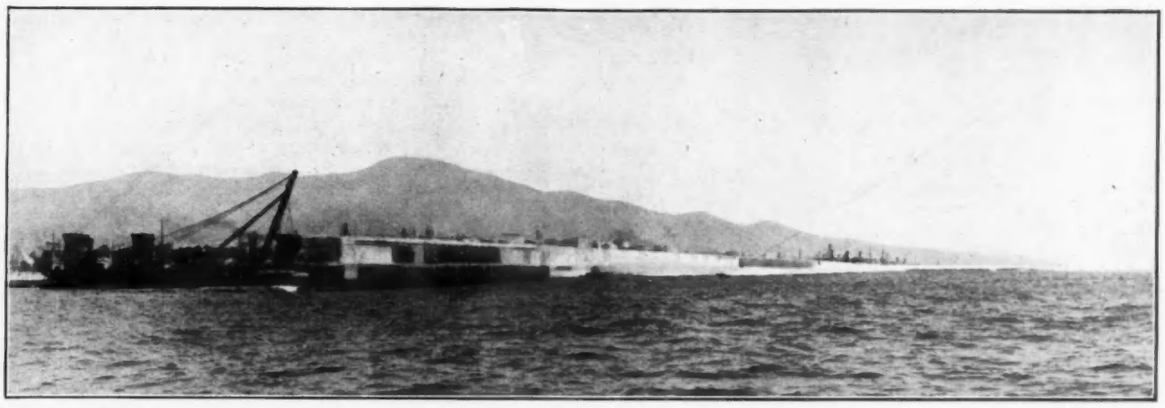
A General View of the Basin Vittorio Emanuele III., the first new part of the Port of Genoa.



The New Airport in the Port of Genoa (Vittorio Emanuele Basin) under Construction.

The Port of Genoa.

Extensions Necessary to Handle Increased Trade.



The Breakwater Principe Umberto, sheltering the New Part of the Port of Genoa, is being extended towards the Polcevera Mouth.

IN order to understand the importance of the new harbour extensions undertaken at Genoa one must first go into the question of the development of trade at this harbour in the course of the past few years and which is as follows:—

	Ships.	Net Registered Tonnage.	Goods Unloaded. Tons.	Coal. Tons.
		ARRIVALS.		
1903	6,335	5,742,527	4,931,320	2,533,873
1913	5,840	7,352,494	6,215,306	3,213,375
1916	4,337	5,524,537	6,865,154	—
1919	3,336	4,289,485	5,205,225	2,008,959
1924	4,879	7,955,793	6,615,314	3,213,096
1929	—	—	6,831,241	3,050,173
		CLEARANCES.		
1903	6,444	5,824,368	692,773	—
1913	5,829	7,343,038	1,211,966	—
1916	4,398	5,573,129	808,097	—
1919	3,270	4,187,851	434,334	—
1924	4,728	7,795,500	839,780	—
1929	—	—	1,098,452	—

From the above figures it appears that the total shipping at Genoa showed an increase of about 1,800,000 tons in the period of 10 years from 1903-1913, and that taking into account the influence of the European War the result of which caused fluctuations which are noticed in Genoese shipping during the period from 1913-1919, it was not until 1924 that trade at this port again reached pre-war figures, so that it appears that during the past five years it has shown an increase of 500,000 tons, that is about 100,000 tons yearly. The importance of this increase is larger than it may appear at first, since it must be taken into consideration that, firstly, the coal import now represents 43 per cent. of the total imports, whereas before the war it represented 50 per cent., and this in spite of the fact that total imports of coal into Italy have considerably increased, and that shipping in Genoa has shown considerable progress; secondly, that the imports of cereals in the course of the past few years at Italian ports has shown a decrease owing to the satisfactory Italian wheat crop; thirdly, that the exports of manufactured goods from this country has been subject to fluctuations originated from the general trade depression, and lastly, that the Black Sea and Near Eastern markets have shown a decreased purchasing power. From the above it appears:— (1) That in the 10 years before the outbreak of the European War shipping at Genoa has shown an average increase of 180,000 tons yearly; (2) that since 1924, when Genoese shipping had reached the pre-war figures, trade at that port has shown an average increase of 100,000 tons yearly, but that this figure may be subject to an increase should conditions of trade become absolutely normal.

Now that the progress of trade at Genoa is established, it is possible to consider the question of the harbour facilities from a point of view of effective reality.

It should be considered that only in 1903 was it decided to enlarge the port of Genoa with the construction of the Ponte Assereto and the Ponte Caracciolo and some other improvements. Such works increased the quayage in the port of Genoa to 7,600 metres, excluding 700 metres of the Ponte dei Mille and 2,400 metres occupied by industrial works, dry docks, etc., which led to an average shipping of about 950 tons per metre of quay yearly in 1913. In 1912 it was decided to undertake the construction of the Bacino Vittorio Emanuele III., but, as a matter of fact, the works have only been started since the war, and it was in 1925 that the first steamer entered the basin, which was completed in 1928. The Bacino Vittorio Emanuele includes the Calata Canzia, the Calata Bettolo, the Ponte Rubattino, the Calata Giaccone and the Calata San Giorgio. The construction of the new basin rendered necessary the extension of the Molo Duca di Galliera, which shelters the port of Genoa, and it has, therefore, been extended towards the West by 1,550 metres and the new breakwater has been named Molo Principe Umberto. The construction of the Bacino Vittorio Emanuele III. has increased the quayage of the port of Genoa to 9,700 metres, and the new dock itself can accommodate 15 ships at one time, and is served by 40 electric coal elevators which can unload 2,000 tons of coal per hour. The average shipping on each metre of quay has thus reached about 820 tons yearly, but it is evident that the Consorzio Autonomo del porto di Genoa has to consider the possibility that shipping will maintain—if it should not reach the average progress of 180,000 tons yearly as before the war—when conditions become normal, the yearly increase of 100,000 tons. It is evident that in such a case shipping at Genoa should reach by 1933 over 9,000,000 tons, which would lead to an average of about 1,000 tons per metre of quayage yearly and would cause congestion.

Here a parenthesis should be made in order to follow the idea of the Consorzio Autonomo del Porto, and this is the question of the state of inferiority in which the harbour of Genoa finds itself as against its competitors in the Mediterranean, and in North Europe, in connection with the proportion between imports and exports. While at Genoa exports are only one-seventh of the imports, at Marseilles exports are one-half of the imports. This situation has an important influence over the development of shipping as tonnage cannot find sufficient outward cargo, and therefore the necessity has arisen for Genoa to enlarge its power of attraction in the hinterland to develop transit trade through this port, and in this connection it has to be pointed out that Swiss exports through Genoa have been showing an increase, and that besides the electrification of the whole line from Genoa to Chiasso (Italo-Swiss frontier) and the construction of the new direct line from Genoa to Milan, the question is seriously being taken into consideration of building a fourth transit line through the Alps on the Stelvio, and to connect Genoa with Verona and the Brennero to enlarge the zone of influence of Genoa over Southern Germany.

Under these circumstances it is evident that the Consorzio Autonomo del Porto has considered whether it would have been advisable to increase the connection with the hinterland without preparing the necessary harbour facilities for the development of transit trade apart from what may be the progress of Italian trade.

This explains why the Consorzio Autonomo del Porto has taken up the idea of further extensions. These include the construction of the new Bacino Mussolini, including 4 jetties measuring 400 metres in length and 180 metres in breadth. These jetties are separated by quays measuring 200 metres in length. The construction of the new dock required a further extension of the Principe Umberto breakwater. It was at first decided to undertake only the construction of two jetties and to enlarge the

The Port of Genoa—continued.

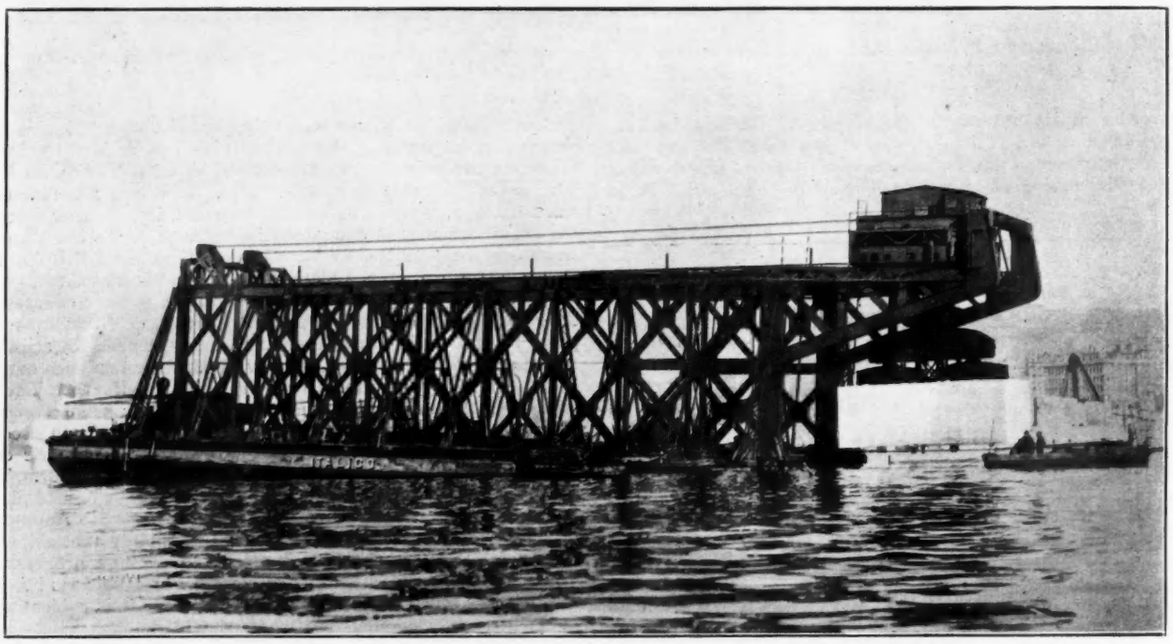
breakwater correspondingly by 2,200 metres. These enlargements are already under construction, but evidently the Consorzio Autonomo del Porto took into account that when the first two jetties of the Bacino Mussolini are ready, quayage will even then not exceed 10,800 metres, and that even if trade should not exceed the present figures, yet the average trade over a metre of quay would never be lower than 700 tons per metre, which is a figure always higher than the figure for foreign ports such as Hamburg, where the average is 250 tons per metre; Marseilles, 360 tons; Antwerp, 400 tons, etc. Admiral Cagni obtained a reduction of the interest rate on the amount of 255,800,000 lire, which the Government has advanced for harbour enlargements at Genoa from 4.50 per cent. to 0.50 per cent. and the executive committee has approved the idea of initiating, during the period from 1929 to 1933, the further construction of two jetties in the Mussolini dock with the corresponding enlargement of the breakwater, involving an expenditure of 51 million lire, which, together with the amount necessary for the construction of the first portion of the dock, will make a total of 125,000,000 lire.

However, the construction of both parts of the Bacino Mussolini are improvements of which the advantage may only be felt in 1932, and consequently the Consorzio Autonomo del Porto has considered the opportunity of undertaking enlargements for a better immediate exploitation of the harbour. In this connection a distinction should be made between works on the quays and works on the sea. Among the first should be mentioned the Jute and Wool Warehouse on the Assereto Mole for an area of 3,500 square metres. This building has two floors and a height of 7 metres. Four 1.5 and 3-ton electric cranes have been provided. The upper floor is served by electric loading and carriage facilities. On the Ponte Caracciolo four warehouses have been built covering an area of 22,600 square metres and a volume of 190,000 cubic metres. The quays facing the two warehouses are served by 18 electric cranes with a capacity of 1.5 and 3-ton, while the neighbouring quays are now to be fitted with 6 and 10-ton cranes. All these warehouses are connected with railway tracks to the main railway lines. Two are already in operation, but two have still to be completed. No less important work is being undertaken at the Ponte Colombo, where four warehouses of 10,000 square metres each are under construction, all fitted with 3-ton electric cranes.

But in connection with new warehousing and unloading facilities it should be noted that improvements have also been undertaken by private firms, and these are the construction of the 40,000-ton oil tank on the first portion of the Molo Galliera, east from the Canzio jetty; the cold storage on the Gadda quay, with an area of 2,250 square metres, and a capacity of 6,000 tons of frozen meat, fitted with air transporters of a capacity of 1,000 tons daily, and the construction of a new cotton warehouse of 4,000 square metres on the Molo Vecchio, etc.

Among the works undertaken on the sea may be mentioned the construction of the Molo Cagni south of the Molo Giano opposite the dry dock, which has been built 325 metres to the west and 368 metres to the south-west, to shelter the inner harbour, and particularly the Boccardo and the Gadda Moles. The construction of this mole has resulted in an additional water space of 40,000 square metres, and which has been set apart for yachts and has been named Duca degli Abbruzzi. Finally the construction of the Western Mole should be noted. In this connection it should be noted that originally it was considered that only the inner side of the Ponte San Giorgio would be used for trade. Later on it was found necessary for shipping to use the outer side of the Ponte San Giorgio also, though ships lying there were in danger from the winds from south-west. In order to shelter this part of the port pending the coustruction of a quay in prosecution of the Ponte San Giorgio scheme, it has been thought advisable to build the eastern side of one of the future jetties of the Mussolini Dock. In order to effectively shelter the Bacino Vittorio Emanuele the new mole should have been longer than the actual jetty of the Bacino Mussolini by about 130 metres, which will have to be removed, and for this purpose a special section of the structure of the mole was created as is shown on Supplement.

But these improvements represent works to only temporarily cope with the uninterrupted progress of the port, as the main part of the enlargements is undoubtedly represented by the construction of the first two piers of Bacino Mussolini, and in this connection it should be noted that the builders of this part of the port have devoted particular care in the construction of the breakwater, as the depth of the submarine wall has been increased from 10.50 metres under the sea—as in the first part of the breakwater named Molo Duca di Galliera—to 11.50 metres in the new section, as is shown on Supplement, while new alterations are to be made in the structure of the mole also shown on Supplement.



One of the Large Floating Stone-laying Cranes employed for the Construction of the New Extensions at Genoa.

On the other hand the new enlargements by themselves are rendering necessary additional works, such as the construction of the new freight railway station on the seaside along the new port, and the increasing tonnage of the new liners ordered by the Navigazione Generale Italiana, the Lloyd Sabaudo, etc., are rendering necessary an increase in the length of the Ponte dei Mille, where the maritime passengers' station is situated, and for this purpose a project has been prepared to organise also the Zingari Quay for the mooring of a passenger liner, so as to increase space for three passenger liners of over 20,000 tons in the port of Genoa, and to cut down the head of the Molo Vecchio, as otherwise the " Conte di Savoia " and the " Rex," the two 46,000-ton liners under construction, would be unable to reach the Ponte dei Mille.

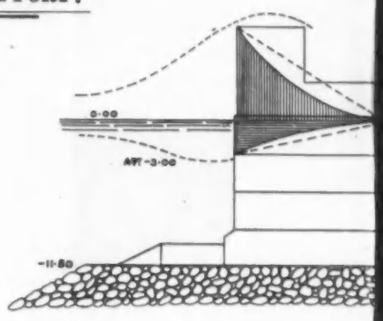
In this connection it ought also to be noted that the construction of the new liners has raised the question of new dry docking facilities for liners 260 metres long, as the new dry dock can only accommodate ships as large as the m.s. " Augustus," and the t.s.s. " Roma," of the Navigazione Generale Italiana, which are about 34,000 gross tons. Premier Mussolini, to whom the question has been submitted by Marquis Negrotto Cambiaso, the new President of the Consorzio Autonomo del Porto di Genova, has made arrangements to ensure the financial participation of the Treasury to the construction of the new dry dock which will be built alongside the existing three.

SUPPLEMENT TO THE DOCK AND

PORT & HARBOUR OF GENOA.

FUTURE EXTENSIONS OF THE PORT.

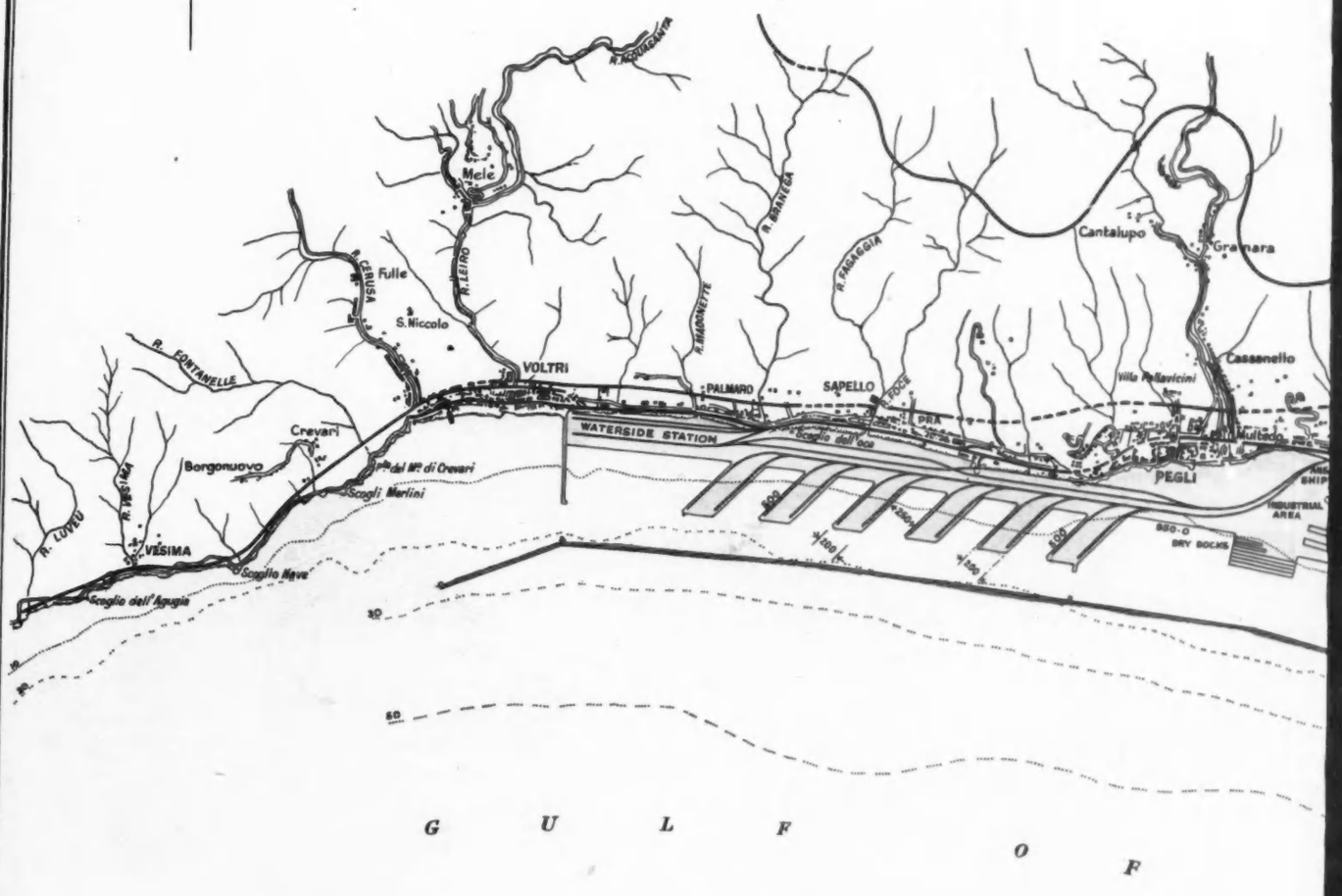
UNDER THE JURISDICTION OF THE AUTONOMOUS CONSORTIUM OF THE PORT.



CROSS S

NEW PORTION SHEWING UNDERWAT

NOTE:- Future Extensions are coloured RED.



Scale for Sections.

METRES 10 5 0 10 20 30 METRES

Scale for Plan.

METRES 1000 500 0 1 2 3 4 5 METRES

1 METRE = 3·28 FEET

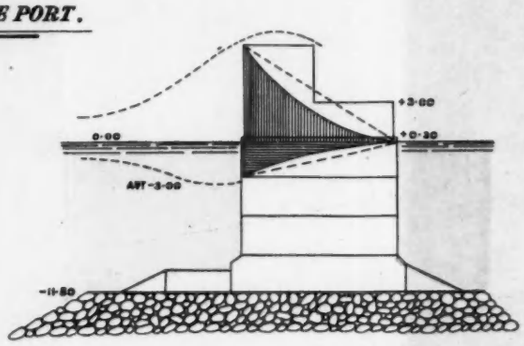
WARD & FOXLOW, Ltd Harcourt St. Mar

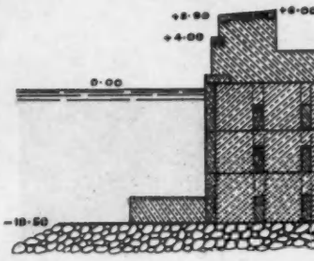
THE DOCK AND HARBOUR AUTHORITY

OF GENOA.

PORT.

OF THE PORT.





CROSS SECTIONS OF PRINCIPE UMBERTO BREAKWATER

NEW PORTION SHEWING UNDERWATER PRESSURE.

OLD PORT

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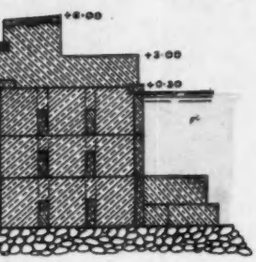
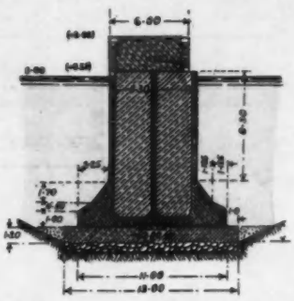
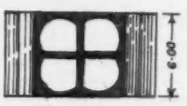


AKWATER. ——

LD PORTION.



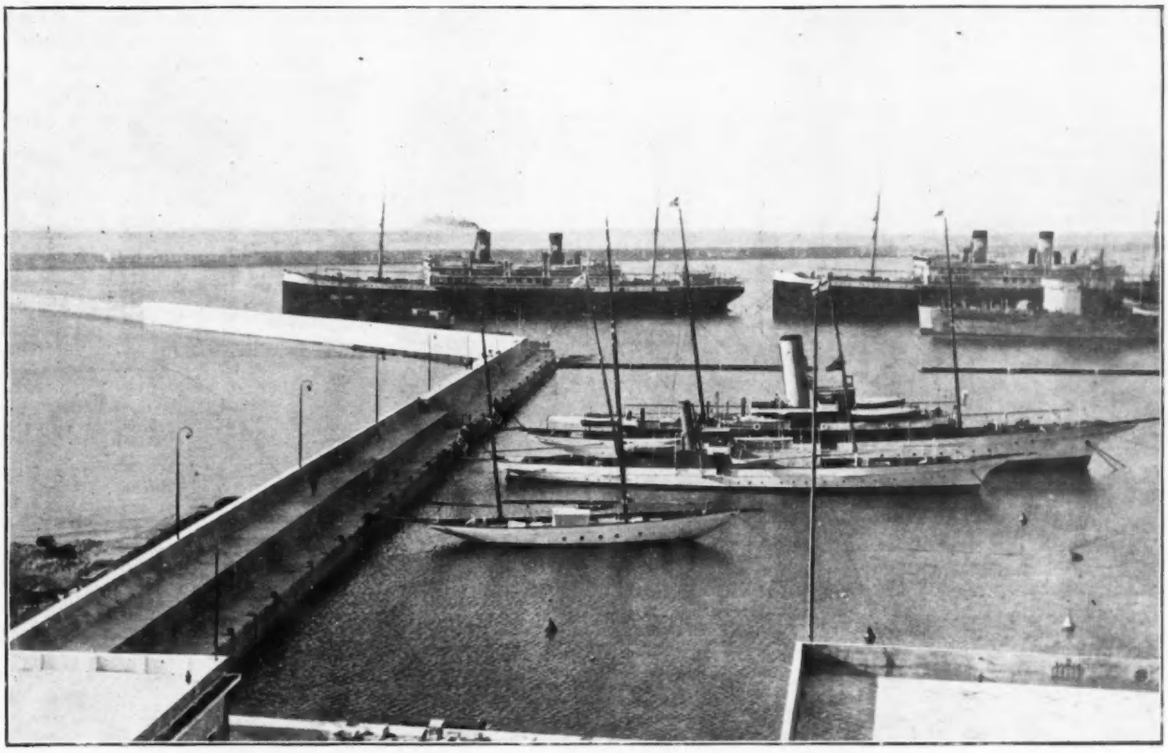
CROSS SECTION OF PONENTE PROTECTIVE BREAKWATER.



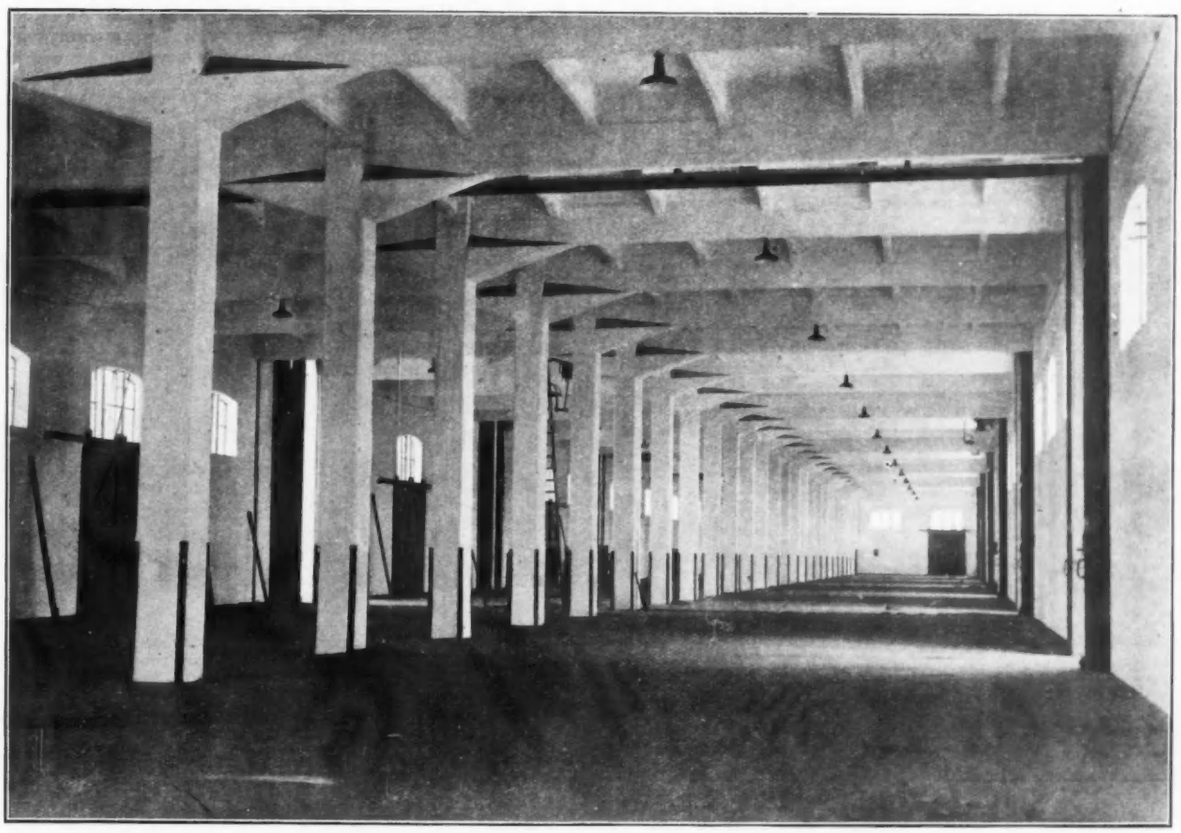
PLAN OF BREAKWATER.

A

The Port of Genoa.



The "Porto Duca degli Abbruzzi" in the Harbour of Genoa.



The Interior View of the Warehouses on the Caracciolo Jetty, which are to be used for Export Trade.

The Port of Genoa—continued.

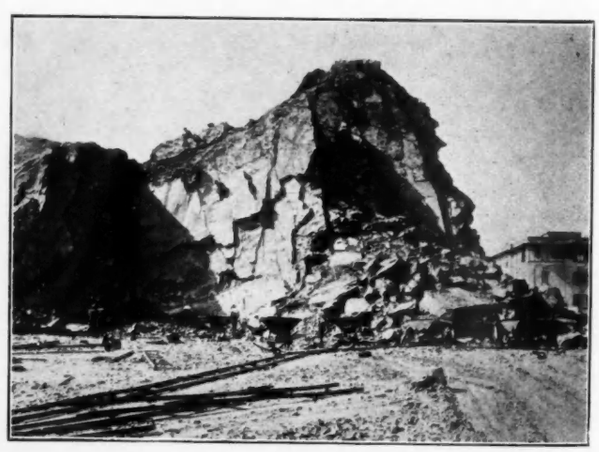
It will be noted from the above that these enlargements refer to the immediate requirements of Genoese shipping, without taking into consideration the influence of the efforts which are being made to increase such trade.

Before going into the question of such efforts it should be noted that the warehousing facilities in the port of Genoa, where quayage at the disposal of trade, is reaching, as has been stated 9,700 metres, and may be noted, as follows:—

Owned by the Consorzio (Quay or Mole)	On July 1st: 1922 No. Buildings.	Floors.	Area Sq. Metres.	1924 No. Buildings.	Floors.	Area Sq. Metres.	1929 No. Buildings.	Floors.	Area Sq. Metres.
Gadda	1	1	1,380	1	1	1,380	—	—	—
Mandraccio	1	2	700	1	2	700	1	2	700
Porta Cavour	1	1	420	1	1	420	1	1	420
Embriaco	1	3	2,000	1	3	2,000	1	3	2,000
Spinola, No. 1	1	3	4,050	1	3	4,050	1	3	4,050
Spinola, No. 2	1	2	1,800	1	2	1,800	1	2	1,800
Calvi	1	3	2,450	1	3	2,450	1	3	2,450
Darsena A	1	3	5,200	1	3	5,200	1	3	5,200
Parodi	4	1	9,320	4	1	9,320	4	1	9,320
Zingari	1	1	870	1	1	870	1	1	870
Doria	6	2	13,200	6	2	13,200	6	2	13,200
San Lazzaro	2	1	1,900	2	1	1,900	2	1	1,900
Colombo, No. 1, 3, 4 ...	3	1	6,980	3	1	6,980	3	1	6,980
Colombo, No. 2	—	—	—	—	—	—	1	4	10,050
Chiappella	1	4	13,200	1	4	13,200	1	4	13,200
Chiappella (Tettoia) ...	1	1	1,900	1	1	1,780	1	1	1,780
Passo Nuovo	1	1	770	—	—	--	—	—	—
Assereto	—	—	—	—	—	—	1	2	5,000
Caracciolo	—	—	—	—	—	—	3	3	23,000
	27	—	66,140	26	—	65,250	30	—	101,920
Owned by Private Firms.									
Dogana	1	—	901	1	—	901	1	—	901
Darsena	8	—	49,305	8	—	49,305	8	—	49,305
Porto Franco	16	—	19,205	16	—	21,500	16	—	21,500
Molo Vecchio	1	4	32,400	1	4	32,400	2	4	43,300
Docks Liguri	2	3	12,971	2	3	12,971	2	3	12,971
Cold Storage at Marinetta	1	2	2,400	1	2	2,400	1	2	2,400
Cold Storage at Gadda Quay	—	—	—	—	—	—	1	4	9,000
	56	—	183,322	55	—	184,727	61	—	241,297
Electric and Hydraulic Cranes	—	—	—	—	149	—	—	274	—

The question of the development of the Swiss transit trade comes under the ordinary operation of the port, and, as a matter of fact, the Consorzio Autonomo del Porto has destined a large new warehouse to the exports of Swiss goods by sea, facilitating the direct transfer of goods from railway cars into ships avoiding the use of barges which increased the cost of operations. There are, however, other factors which should be taken into consideration in connection with the efforts which are made by the Consorzio Autonomo del Porto di Genova to increase shipping, and these are:—(a) the decision to bring the average shipping over a metre of quay per year as low as the average of other large European ports, and there is no doubt that the speeding up of unloading and loading is a factor of attraction of trade; (b) the concentration of the interests of the Italian Mercantile Marine in the hands of Genoese shipowners, permitting a better distribution of steamship services, as will be noticed from the fact that the inauguration of the new service from Genoa to Capetown via Gibraltar will be followed by the creation of an express service from Genoa to California with liners of 12,000 gross tons, of new services to the Black Sea ports and the Far East, etc.; (c) the efforts made by the Italian industrialists to increase exports to overseas markets, and the influence of the creation of the new industries upon the imports of raw materials which are showing an increase; (d) the action undertaken by the Genoese business world to obtain the construction of a third line from Genoa to Milan, shortening the present route and increasing the speed of the trains, the construction of a railway from Genoa to Borgotaro on the Spezia-Brennero railway, or from Genoa to Piacenza in order to reduce the trip from Genoa to Munich, etc.

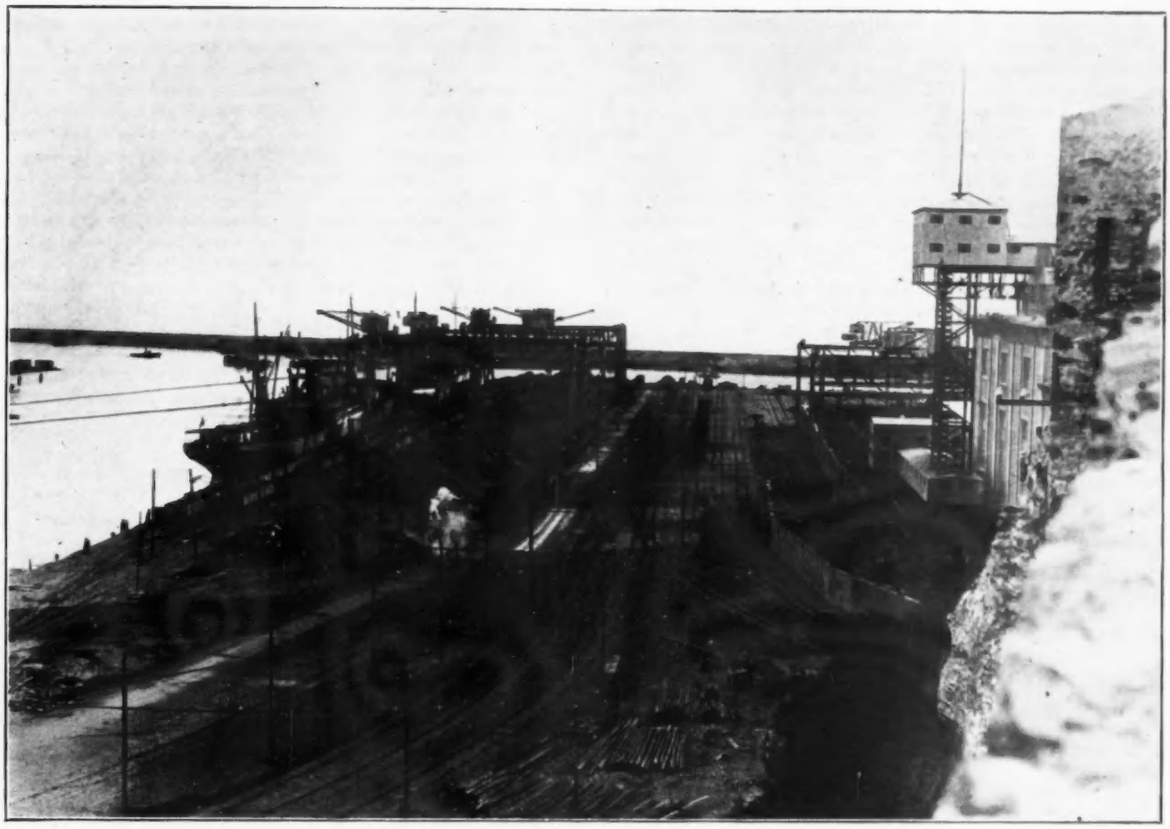
The New Pilot Tower in the Port of Genoa.



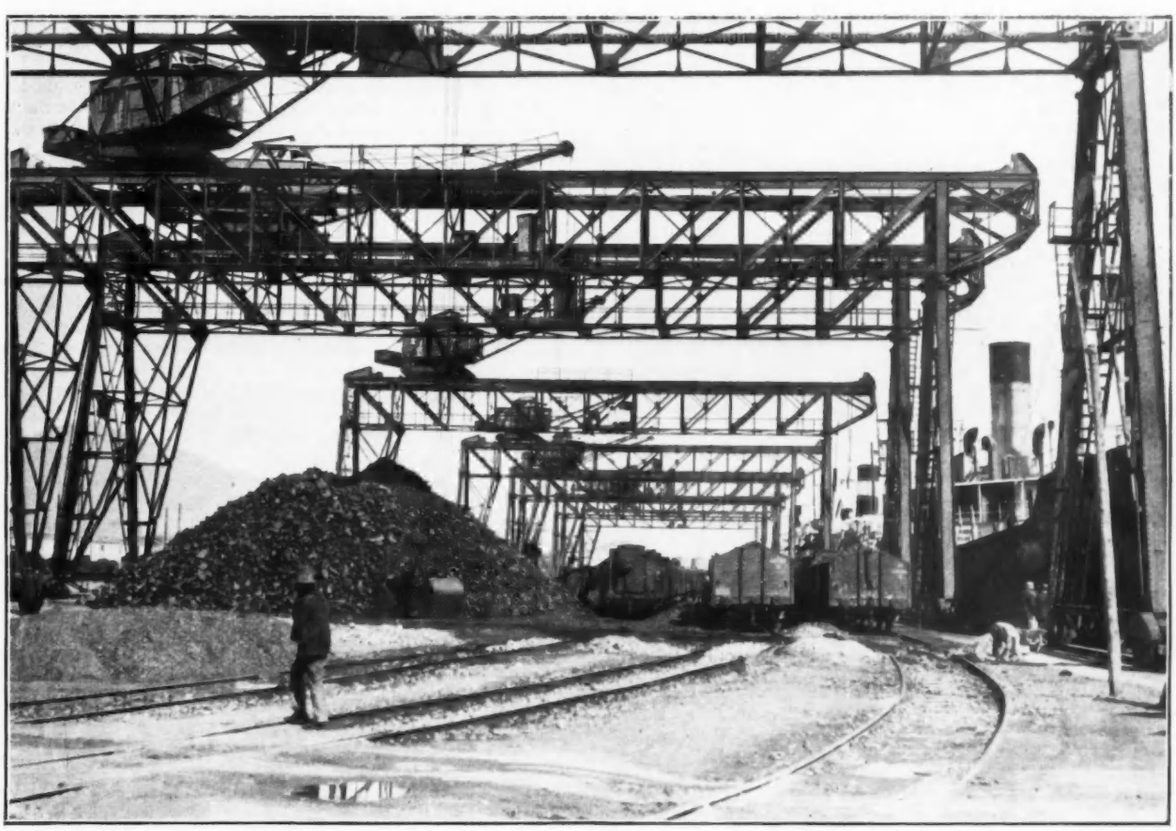
The Chiappela Mine, where the material necessary to build the Benito Mussolini Basin is obtained.

There is no doubt that these factors are not bound to develop in a day or two, but that sooner or later the influence of this need of expansion of the Genoese shipping will be felt, and it is not surprising if after the pre-war experience which the Consorzio Autonomo del Porto has had, in connection with the

The Port of Genoa



San Giorgio Jetty in the Port of Genoa (New Basin Vittorio Emanuele III.).



Electric Coal Elevators of four tons each.

The Port of Genoa—continued.

harbour enlargements, that they have taken into consideration the question of extending the present harbour of Genoa beyond the Mussolini Dock, the end of which is marked by the Polcevera mouth. It should also be considered that such project will not have to be put into effect at once, but that it has simply been studied as a possibility in the event of Genoese shipping continuing to show an increasingly upward tendency during the 1930-1933 period.

Such project includes the construction of a breakwater from the mouth of the Polcevera up to Voltri for about three kilometres. In the new basin resulting from such construction, there would be an industrial zone including the Ansaldo and the Odero Shipbuilding yards at Sestri Ponente, several iron and steel works, oil refineries, etc., as well as additional dry docks, and then a set of jetties 400 metres long increasing the present quayage of the port of Genoa to about 30 km.

If Genoese shipping should not exceed, even when this quayage is at the disposal of trade in the largest Italian port, 10,000,000 tons yearly, it will be seen that the average shipping on each metre of quay yearly would be 330 tons, which is a figure higher than that of Hamburg or Liverpool, and consequently it does not appear that the Genoese projects are much exaggerated if they are really to be carried into effect.

Admiral Cagni, in a speech to the executive committee of the Consorzio Autonomo, before relinquishing the presidency, spoke of this project as a possibility and not as something to be carried out at once. The leaders of the harbour administration in 1903 discussed the question of building up the Bacino Vittoria Emanuele as a possibility and not as something to be done at once, but in less than 10 years, shipping having shown an increase of about 2,000,000 tons, this possibility had become an immediate necessity, and there is no doubt that, had the war not broken out, the situation of shipping at Genoa would have become critical, as the average shipping on each metre of quay would have reached 1,000 tons before any effective improvements could have been carried out.

Port of Southampton Topics.

April Proves a Good Month.

APRIL was quite a good month as far as traffic in Southampton Docks was concerned, for, apart from a decrease in cargo and the number of troops outward, substantial increases were recorded as compared with the corresponding month last year. The number of ships inward advanced from 276 to 285, and outward from 281 to 288, while the gross tonnage revealed an increase of 194,285 inward and 185,203 outward, the totals being 1,540,872 inward and 1,546,498 outward. The net tonnage totals increased from 728,795 to 826,322 inward, an advance of 97,617, while outward the figure rose from 726,922 to 832,549, an increase of 105,627.

The cargo returns, both inward and outward, reveal a falling off, the inward being down by 9,074 tons and the outward by 5,891 tons. The figures were: inward, 39,712 tons, as against 48,786 tons in April, 1929, and outward 37,105 tons, compared with 42,996. The passenger traffic showed an increase inward of 677, from 18,114 to 18,791, and outward an increase of 1,469, from 17,545 to 19,014. Inward troops numbered 6,859, as compared with 6,010, an increase of 849, but outward there was no movement to compare with the total of 1,513 in April last year.

Ship-and-Air Mail Service.

The ship-and-air mail service which was inaugurated at Southampton this month (May), when a seaplane catapaulted from the North German Lloyd liner " Bremen " when 300 miles west of Land's End, delivered mails at Southampton many hours before the ship reached the port, indicates a development which is likely to be still further made use of in the near future. The venture was certainly very successful. The German Air Lines have shown considerable enterprise in the matter of trans-Atlantic mails, in conjunction with the North German Lloyd, and although the bag of mail landed at Southampton was a small amount it showed that considerable time can be gained by this method of delivering mails in this country.

The main mail which the seaplane carried was for Germany. It was only at the last minute when it leaked out that the seaplane was to call at Southampton for the purpose of refuelling on her way to Germany that the bag of mails for this country was decided on, and passengers wrote letters so that they could take advantage of the opportunity. The seaplane carried a dozen bags of mail for Germany, and after calling at Southampton left for Amsterdam, where the night train to Cologne was caught.

The pilot of the machine, Captain von Studnitz, recently opened a similar service from the " Bremen " when she was approaching New York, and he expects to inaugurate a service from the " Europa " to Southampton in the near future. It is the intention to make the flights from the " Bremen " and " Europa " a regular feature when the vessels are approaching America and Europe. The mails " expressed " to Germany reached their destinations two days ahead of the usual time, while the bag landed at Southampton was 16 hours ahead of the liner.

The seaplane which carries out the service is carried on the upper deck of the " Bremen." During the 300 miles journey to Land's End the pilot of the machine received his bearings from the wireless operator on the " Bremen." Afterwards he " hugged " the shore until he reached Southampton.

New Liners Call at Southampton.

Yet another has to be added to the list of new passenger vessels which the port of Southampton has welcomed this year. The new Nederland Royal Mail liner " Johan van Oldenbarnevelt " (18,000 tons) called in the middle of the month and embarked passengers for her maiden voyage to the Dutch East Indies.

The magnificent new vessel was a little late in arriving, for shortly after leaving Amsterdam she was involved in a collision with the steamer " Reggesroom," and had to return to port for repairs. There was, however, no trace of damage when the vessel called at Southampton, and the only effect of her collision was to make her stay here shorter. In order to pick up a little of the time she had lost she left Southampton within two or three hours of her arrival, not even waiting for the 800 or 900 tons of cargo which was ready for her. Normally the Nederland Royal Mail liners calling outward at Southampton load a considerable amount of cargo for the Dutch East Indies, and the " Johan " was no exception, but it was decided not to delay the ship to pick it up. In order to reduce the delay to the cargo which was left, however, the Nederland Line arranged for one of their newest and fastest cargo vessels, the motor-ship " Poelau Roebiah " (9,251 tons) to call three days later for the cargo.

The " Johan van Oldenbarnevelt " was fully booked up for her maiden voyage, and took on 100 passengers at Southampton. It was expected that by the time she arrives at Batavia she will have made up the time she lost as a result of the collision.

The " Poelau Roebiah " was the first vessel of her class to call at Southampton, and those who saw her were much struck with the arrangements made for the rapid handling of cargo, and, more particularly, the accommodation for passengers. This vessel can carry 35 in one class, and they have the best part of the ship, while the deck space reserved for them is very large. The vessel, too, can do 16 knots, which is a good speed for certain routes of traffic. It is interesting to note that the " Poelau Roebiah " was due, on her outward voyage, to call at Jeddah and pick up 1,100 pilgrims from Mecca and take them to Java. These voyagers sleep between decks.

Developments in trade to the Dutch East Indies have followed one another in rapid succession, and now that the Rotterdam Lloyd have taken over the " Baloeran," and will at the end of the year receive the " Dempo," they will have three fast vessels on their service. Accordingly they are contemplating the re-engining of the " Indrapoera " and the " Slamat."

Another new vessel to make her initial appearance at Southampton has been the East Asiatic Company's " Boringia," outward bound for Bangkok. This motor-ship, which has a deadweight tonnage of 8,000, is, like all the company's large fleet, luxuriously equipped, and there is little doubt she will prove a popular passenger unit. Southampton recently received a call from the " Alsia," another new motor-ship belonging to the East Asiatic Company, and towards the end of the month yet another motor-ship which has been built for them, the " Amerika," made her maiden call at the port, opening a new service from Southampton in connection with the North Pacific service.

Big Dredging Contracts secured by Southampton Firm.

The securing by the James Dredging, Towage and Transport Co., Ltd., of Southampton, of three contracts of the

Port of Southampton Topics—continued.

value of £1,000,000 has given considerable satisfaction in Southampton, where the firm are at present engaged on dredging and reclamation work in connection with the Docks extension on the Western Shore.

The biggest of the three contracts is in regard to the River Bann Drainage scheme, where work to obviate the flooding which periodically occurs from Lough Neagh will be undertaken. The amount of the contract is £650,000, and the work will take five or six years to complete. The other contracts booked are for harbour improvement works at Douglas, Isle of Man, and at Folkestone. In the latter case the contract provides for the dredging of the outer and inner harbours to facilitate the running of the Southern Railway Company's steamers from that port to the Continent.

The placing of these contracts for dredging and drainage will mean that several hundred men will be absorbed, particularly in Ulster. It is estimated that 500 men will be employed on the dredging and auxiliary work to be undertaken in respect of that contract alone.

In addition, the contract will be welcome in that it will provide for certain work in the shipbuilding trade, for it will be necessary to build two new dredgers of special dimensions to enable them to navigate the locks on the river Bann. The orders for these are to be placed immediately, while orders for a new tug and certain auxiliary plant have already been placed.

North German Lloyd Express Service.

The arrival of the " Columbus " at Southampton at the end of May indicated the re-establishment of the full express service of the North German Lloyd from Southampton to the United States. The " Columbus " has been on a trip round the world. In the meantime the " Europa " has joined the " Bremen," and both have been engaged in breaking speed records.

Before she went on her world tour the " Columbus " was laid up to be re-engined, and the result is that she can now save a couple of days on the run across the Atlantic as compared with her times last season. She is now due at New York on the sixth day out from Southampton. The " Europa " and the " Bremen " are, of course, much speedier, and that accounts for the fact that, while the two record-breakers will use Southampton on the voyage from New York, it will be more convenient for the " Columbus " to make the homeward call at Plymouth. She is the only trans-Atlantic vessel of the company that will use the western port.

The express vessels of the company are not yet running to definite days, and their stay in port also varies somewhat. On her middle-of-the-month trip, for instance, the " Europa " had only two days in New York, and was back again at Southampton on the twelfth day after her departure. The "Bremen," too, had a short stay in New York. The utmost service is being extracted from the two speedy vessels, and the North German Lloyd are making the most of their opportunities.

Increase in Cargo Traffic from New Zealand.

A feature of the activities in Dockland at Southampton recently has been the increasing cargo traffic from New Zealand. In the past month there have been particularly big consignments. The New Zealand Company's vessel " Remuera " brought 15,000 carcases of mutton and lamb, about eight tons of butter, and a big quantity of fruit. The same company's " Rangitiki " later in the month brought over 10,000 carcases, about 7 tons of cheese, 339 tons of fruit, six tons of butter, as well as a large quantity of general cargo.

It is interesting to note, too, that the " Rangitiki " carried the largest number of passengers brought from New Zealand to Southampton. It was the first time that over 500 passengers had been landed here from one vessel from New Zealand, the previous record being 446 brought over by the same vessel on her maiden voyage.

Southampton Master Mariners' Club.

Southampton Master Mariners' Club at their weekly luncheons have been discussing various aspects of scientific development which have relation to the sea. At one meeting the discussion centred round noctovision, the latest scientific invention designed to assist the seafarer, and at another they discussed methods of sounding at sea.

Members of the Baird Television Co., who were the guests of the Club at lunch, told of the interesting experiments being conducted with a view to giving directionally audible reception of light through the thickest fog, a matter of prime importance to navigators. Captain Michael Cripps said it had been found possible in experiments to receive the impression of a light three miles through the thickest fog by means of noctovision. Experiments were being made with a view to perfecting the apparatus for use at sea, in the air, and for railway signalling in times of bad visibility. At present in fog it might be possible to hear a lighthouse or a ship giving audible signals without being able to detect the direction from which the warning came, but with noctovision that difficulty vanished. As an indication of what could be done at present it was mentioned that the light of a candle could be detected at a distance of two miles with an apparatus not fit for use on ship.

Later the invention was demonstrated to a number of the members of the Club, and they were considerably impressed by it.

The discussion on soundings was opened by Captain J. W. Williams, D.S.O., R.D., R.N.R., who said that soundings could be secured at the rate of one every three seconds, but the question remained whether every confidence could be placed in them. Capt. J. A. Wolfe, R.D., R.N.R., said the Cunard Line had had experience with echo sounding machines and their commanders " swore " by them. They had proved absolutely reliable, and apart from their initial cost there was no expenditure. Capt. W. V. J. Clarke, D.S.C., said the only thing lacking in regard to the echo sounding machine or fathometer was that it could give no indication of the nature of the sea bottom. Captain C. Adam said that soundings, in conjunction with a wireless cross-bearing, gave a very good idea of position. His experience of echo sounding was that it was more reliable in shallow water than in deep.

An Interesting Picture.

Meeting for the first time in this country the five-masted sister ships, " Rotorua " and " Argyllshire," made an interesting picture when they were in dock at Southampton at the same time at the beginning of the past month. The "Rotorua," formerly the " Shropshire," was built as a companion of the " Argyllshire," but since their early days their paths have differed, and apart from the fact that they are of about the same tonnage and have the exceptional number of five masts, they would not now be taken for sister vessels. When the "Shropshire" was taken over for the New Zealand Company's passenger service and renamed the " Rotorua " she was altered considerably, her passenger accommodation being greatly increased. The "Rotorua " landed at Southampton meat and butter from New Zealand, and the " Argyllshire," making her first visit to the port, brought a big consignment of meat.

Port of Manchester.

The Port has not entirely escaped the consequences of the general depression in trade which characterised the first quarter of the year and extended into April, a month in which the overseas trade of the United Kingdom touched melancholy depths.

The outstanding feature on the imports side during April was the unusually large cargoes of Indian cotton entering the Port. The "City of Salford" brought a record cargo of 17,000 bales, but a new record was created by the "City of Birmingham" which followed with nearly 20,000 bales. At the end of April the imports of East Indian cotton for the current season were over 76,000 bales against 34,000 bales for the corresponding period of the preceding season. The proportion of Egyptian cotton coming direct to Manchester has been fully maintained and Sudan cotton shipments have been coming direct, further consignments being expected. Manchester's percentage of American cotton imports into Great Britain has improved over last season when, it will be recalled, the relative imports touched their highest point.

Inward fruit cargoes were above the average for the month. Direct shipments of Australian, New Zealand and Tasmanian fruit are on passage.

Iron ore imports have improved. The copper trade from the west coast of South America is now established and another cargo is on passage. This regular service offers tonnage for other importers of South American produce. Arrivals from the North American Pacific Coast ports were above the average in April.

The timber trade has been good during the first quarter of the year and April imports have been considerably above the average. The increase in Baltic timber, in some measure, has been due to mild weather.

The irregular strike which occurred just before Easter and lasted eight days naturally resulted in a good deal of dislocation, but normal conditions were quickly established upon the men returning to work. The strike was a breach of the National Agreement between Port employers and employees and that the matters in dispute were in the end brought before the orthodox machinery of conciliation for settlement may tend to avert irregularities of the kind in future.

Mr. H. A. Reed, who was first associated with the Canal at its construction and was appointed Chief Engineer in 1912, resigned in April and was succeeded by Mr. F. B. Greenwood, who joined the Company in 1895.

The new Trade Agreement with Russia has already resulted in the booking of outward freight space for machinery consignments in May. This will be the first export of machinery from Manchester to Russia which has taken place for some time.

North-East Coast Notes.

Interesting Wear Proposal.

ONE of the most interesting proposals for harbour improvement being considered on the North-East Coast at the moment is that for the construction of a deep water quay at Sunderland. The suggestion was the subject of careful deliberation at the end of April, when a joint meeting of representatives of the River Wear Commission and of the local Town Council was held under the presidency of the Mayor (Dr. Modlin).

A general idea of the scheme was given by Mr. F. Humble, General Manager of the Commission. He said that when the plan was first mooted, and when a Government grant was promised in 1925, the cost was estimated at £200,000. It was then found, however, that the Corporation had no power to build the quay, but in their Act of 1927 power was obtained to carry out such an undertaking. The scheme to-day is estimated to cost £300,000, with an estimated further £50,000 for the purchase of property. The Commissioner's Engineer (Mr. Tripp) estimated that the quay could be built in two years, giving employment to 200 to 250 men. The Government grant was expected to be 50 per cent. of the interest only for 15 years. The estimated net revenue for the first year's working might be put at £1,500 rising as trade increased. Sinking fund and interest at 5 per cent. on £350,000 over a period of 60 years would mean £18,500 per annum, or a charge on the rates of 2½d. in the £ for the net figure of £8,250 for the first 15 years.

Mr. J. E. Dawson, Chairman of the Commission, strongly supported the idea of having a deep water quay for the port. The finest unproductive site on the North-East Coast, he said, was the Low Quay, at present derelict. A new quay on that site should be equipped and adapted for any and all the purposes of the port, including the import of general merchandise and supplies to steamers needing bunker coal only.

The scheme was approved in principle, and a sub-committee was appointed to go into details.

Newcastle Quay Extension.

In connection with the proposed extension of Newcastle Corporation Quay, a petition was lodged with the House of Lords for sanction to introduce a late Bill to empower them to construct the quay, and to borrow the necessary money, about £200,000.

The question of the extension was discussed at the last meeting of Newcastle Chamber of Commerce Council, and they took strong objection to the stevedoring clause in the Bill, on the ground that a monopoly was being sought by the promoters, and the Council unanimously agreed to forward to the Town Clerk a resolution pressing for the withdrawal of the clause respecting stevedoring, and requesting also the insertion of the standard revision clause regarding dues, and urging the repeal of certain powers now held in accordance with the 1904 Act.

Some Trade Statistics.

Mr. R. S. Dalgliesh, moving the report of the Docks and Trade and Commerce Committee at the April meeting of the Tyne Improvement Commission, submitted figures showing that 1,549,977 tons of coal and coke were shipped from the river in March, a decrease of 42,415 tons as compared with March, 1929. Compared with the 1913 figure, however, the shipments for March represented an increase of 68,259 tons. Despite the slackening off in the trade, the shipments for the first three months of this year (4,728,491 tons) were still 151,410 tons more than those for the March quarter of 1929, and only 33,322 tons behind the 1913 figure.

Lord Kirkley drew attention to the fact that the exports for the three months of this year exceeded those of the corresponding period of 1929, and the figures were even more satisfactory than they appeared. Actually, the shipments abroad were 200,000 tons up, but there had been a decrease of 50,000 tons in the home trade, leaving a net increase of 150,000 tons.

Mr. Francis Priestman mentioned that the Committee had felt justified in reducing the interest on loans from 5 to 4½ per cent., and Lord Kirkley (Chairman of the Board) remarked that they had been able to renew loans at 4½ per cent.

Alderman Sykes, moving the adoption of the report of the Harbour and Ferry Committee, called attention to the fact that the gross amount of tonnage laid up in the river was 189,000 tons, and unfortunately there was no immediate prospect of the quantity being diminished.

In regard to idle tonnage it may be noted that, according to the figures of the Chamber of Shipping, the position at the North-East Coast ports was as follows:—

Port.	Vessels.	Net Tons.
Blyth	5	7,634
Hartlepool	5	8,725
Middlesbrough	8	13,592
Newcastle	105	189,543
Sunderland	11	25,802

Larger Wear Shipments.

The official return showing the quantities of coal and coke shipped from Sunderland during the quarter ended March 31st shows a general increase of 2 per cent. The gross total shipments of coal were 1,297,313 tons, against 1,262,491 tons in the previous year. Coke shipments aggregated 17,550 tons against 28,150 tons. Imports of general goods showed a marked increase, the total being 91,180 tons against 70,373 tons in the previous year. Exports (excluding coal and coke) at 24,460 tons showed a material advance on the 9,673 tons in 1929.

On the recommendation of the Works Committee, permission was given to the Lambton, Hetton and Joicey Coal Co. to reconstruct their staiths and to build a new concrete retaining wall at the rear of them.

Blyth.

No less satisfactory figures were submitted at the Blyth Harbour Commission by Col. N. I. Wright, presiding. The total for the first quarter of 1930 was 1,374,670 tons, as compared with 1,322,411 tons in 1929, and 1,103,740 tons in 1913. The figures for 1930 show an increase of 4 per cent. over 1929, and 25 per cent. over 1913. The Chairman stated that the present uncertainty in the coal trade was making it very difficult for merchants to find markets abroad, and in consequence there is a decrease in the shipments for March, 1930, as compared with 1929, and so far as the figures were available for April there was a considerable drop as compared with last year.

Another instance of quick loading on the Wear is reported. The West Hartlepool steamer "Redepool" went to the drops of the Wearmouth Coal Co. and took in 8,800 tons of cargo and bunkers in 31 hours.

Further smart work is reported by the London and North-Eastern Railway Co., who state that recently on two consecutive days the steamer "Brika" loaded 665 tons of bunkers in nine hours, and 6,850 tons of cargo coal in 21½ hours at Hartlepool.

Government Grant and Taxes.

Mr. Justice Rowlatt, in the King's Bench Division, on April 30th, dismissed an income tax appeal brought by the Seaham Harbour Dock Co., in respect of the taxing of a Government grant to the company in connection with a scheme for the extension of their dock. The Company contended that the grant was a capital receipt and not income which could be taxed.

His Lordship, in dismissing the appeal with costs, said that normally the company did not get a receipt of that kind, but in his view it came in extraordinarily as a sum received by the company in carrying out its trade as a dock company.

Personalia.

Sir Walter Raine, of Sunderland, has been elected Chairman of the British Coal Exporters' Federation, in succession to Mr. C. L. Clay, of Cardiff, who has retired.

Mr. Summers Hunter has recently retired from his position as Chairman and Managing Director of the North-Eastern Marine Co., Ltd., of Wallsend and Sunderland.

Mr. Austin Kirkup and Mr. John R. D. Bell have been elected directors of the Lambton, Hetton and Joicey Collieries, Ltd. Both have already served a large number of years with the firm, Mr. Kirkup as chief mining agent and Mr. Bell as chief fitter.

The death of Mr. Henry Weddell, of Newcastle, at the end of April removed one of the oldest quayside standards, who had about 60 years' association with shipping business. Formerly with John Hall, Junr. and Co., he was for about 25 years secretary of the Elswick Steam Shipping Co., Ltd.

Big Shipment of Whale Guano.

Many strange shipments find their way over the docks of the Port of New Orleans, and when the big steamship Glitra berthed at the local wharves, she established a record in the unique and novel, as part of the great vessel's cargo were 21,326 sacks of whale guano. This cargo came from the South Georgia Island, far to the east of Cape Horn, the southern extremity of South America, and just within the Antarctic Ocean. Down in that bleak and unfriendly quarter of the globe, where the grey mists sweep seaward from the ice packs, the whale is hunted and slaughtered by the thousands, and the guano is preserved for shipment to the ports of the world. This is the second cargo of its kind ever to reach New Orleans. The Glitra was consigned to the Texas Transport and Terminal Co. of New Orleans.

Some Notes on the Design of Gravity Wharf and Dock Walls.

General Remarks.

GRAVITY WALLS for wharves and docks were briefly touched upon in the April issue of this journal, and some remarks were made upon earth foundations. The present article is in the nature of some practical notes on the design of such walls, with some examples of gravity walls constructed in recent years.

The use of wet docks with lock entrances in ports situated some distance up tidal rivers is fairly general, as being the only satisfactory means of providing accommodation for large numbers of ships and safe berthage. The walls of such docks are usually of the gravity type.

In seaports and ports at the mouths of large rivers with good depths of water, open or tidal wharves are very common, in some ports even where the range of tide is 22-ft. or more.

In such cases the form of construction is either of the piled wharf type, or built with monolith or caisson foundations with gravity walls super-imposed. Gravity walls of various types for docks and wharves are therefore likely to be a favoured form of construction for many years to come.

The design of retaining walls is dealt with in many text books and papers, there being few problems in engineering science on which there has been more research and discussion, and the subject even now appears to be far from being exhausted.

The calculation of the stresses in a retaining wall is a somewhat complex matter and involves a number of considerations, the exact determination of which is difficult if not impossible, and conclusions therefore are, to a great extent, based upon conjecture.

The chief difficulty which arises in the satisfactory design of such walls is the uncertainty of the behaviour of the materials forming the backing of the walls.

A retaining wall consisting of uncemented blocks, or, strictly speaking, where for the purposes of calculation the tenacity and adhesion of the mortar is neglected, may fail from the following causes:—

(a) By the overturning of some one or more of the blocks upon their edges;

(b) By crushing, if the pressure be great enough and distributed over too small an area;

(c) By the sliding of some one or more of the blocks on their bed joints.

Most modern "gravity" wharf walls are homogeneous in construction, and the consideration of overturning, crushing or sliding portions of the wall is in general not apparent.

Although stability and strength are closely allied, the latter aspect of the case may well form the subject of separate investigation. It is therefore proposed to confine these notes to resistance to bodily movement as distinct from resistance to deformation and fracture.

We are therefore concerned with overturning and sliding of the wall as a whole and crushing of the strata below the wall.

There must be very few, if any, gravity wharf or dock walls which have failed by simple overturning.

The only situation in which this is likely is in the case of walls founded upon a rock strata or upon a piled or monolith foundation; or in fact any foundation whose resistance to crushing is greater than the material of which the toe of the wall itself is composed.

Failure of a wall due to direct overturning is not then very likely, but many cases have occurred where the strata under the toe has been crushed, the toe having sunk.

It is easy to see that when the toe has sunk downwards, the tendency to slide has increased, and in many failures this action has completed the destruction of the walls.

Forces in Action on Gravity Walls.

Considering the stability of a retaining wall, the stresses or forces acting upon it are as follows:—

(a) The lateral pressure on the back of the wall of the material forming the backing and of any water contained in the backing;

(b) The lateral and vertical pressure on the back of the wall due to any surcharge of material or to any loads on the wharf;

(c) The pull of a ship's moorings on any bollards;

(d) The lateral pressure of water, if any, in front of the wall;

(e) The lateral resistance of material, if any, in front of the wall or in front of the toe of the wall;

(f) The lateral resistance due to the slope and/or steps, if any, in the base of the wall;

(g) The resistance due to friction between the base of the wall and the material beneath it;

(h) The resistance due to friction between the layers of material beneath the base of the wall, and/or the resistance due to friction or adhesion in the materials themselves;

(j) The weight of the wall;

(k) The weight of the backing resting on the back of the wall;

(l) The weight of the water above the toe;

(m) The upward pressure of water under the base of the wall, i.e., the buoyancy of the wall;

(n) The friction between the backing and the back of the wall;

(o) The friction between the face of the toe and material in front of it;

(p) The upward resistance of the material under the base of the wall; that is to say, the bearing pressure of the material.

These forces are shown diagrammatically in Fig. No. 1.

To ensure stability of the wall the algebraic sum of the moments of all forces present about any point must be zero.

The majority of the above forces are present in most walls of whatever type and construction they are composed, and vary mainly in the manner of application.

As has been mentioned the chief difficulty is that which arises out of the uncertainty of the behaviour of the materials forming the backing of walls. This leads us to a consideration in detail of the forces acting upon walls.

(a) Pressure on the back of the wall of the material forming the backing and of any water therein.

Calculations of the pressure on the back of walls are all based upon the angle of repose, or angle of internal friction of the soil or material constituting the backing, and herein lies the chief difficulty before referred to, for this angle varies not only in different soils, but also with their degree of saturation.

Many theories have from time to time been advanced to determine the pressure and resistance of soils. The application of these theories to the conditions found in practice constitutes a further difficulty.

The earliest theory of earth pressure appears to be that advanced by a French military engineer about the year 1773, by name Charles Coulomb. Briefly, he assumed that a wedge of earth exerts the maximum pressure upon a retaining wall, this wedge having the back of the wall for one side and a plane (which passes through the heel of the wall), called the plane of rupture, for the other. The plane of rupture lies between the plane of repose and the back of the wall, and when there is no surcharged material can be shown to bisect this angle.

By Coulomb's theory the thrust on the back of the wall always acts horizontally, whether the ground at the back of the wall is surcharged or not, and at one-third of the height of the wall above the base, in the former case.

This readily applicable theory is still widely used.

Professor Rankine in 1857 advanced a different method based upon different hypotheses, i.e., his theory of the frictional stability of loose granular material and conjugate pressures. He assumed that the material at the back of a wall is loose and granular and consequently that the pressure always acts parallel to the inclination of the surcharge; that is to say, is horizontal when the backing of the wall is horizontal and inclines at the same angle to the back of the wall as the finished surface of the ground if surcharged.

This theory is as follows:—"The resistance to displacement, by sliding along a given plane, in a loose granular mass, is equal to the normal pressure exerted between the parts of the mass on either side of that plane, multiplied by a specific constant." The specific constant is the co-efficient of friction of the mass and also the tangent of the angle of repose.

By mathematical calculation, Rankine deduced from this theory formulae not only for the lateral pressure of loose granular material, but also for its supporting power as a foundation.

Rankine's theory is somewhat defective in its relationship to ordinary retaining walls with well consolidated backing, but it is nevertheless apparent that calculations based upon this theory will err only upon the side of excessive stability. In spite of criticism of the theories of Coulomb and Rankine, British practice is still based upon them.

Other formulae have been put forward, among them being Levy, Scheffler, Reval, Bell,* Baker, and there have been many other workers in the field.

Professor Scheffler considered that the pressure due to the backing material always acts at an angle to the horizontal equal to the angle of repose of the material.

Other authorities assume inclinations between those proposed by Rankine and Scheffler, which rules give the extremes in either direction.

Rankine's formula gives the smallest value to the pressure, but the line of action has the least inclination to the horizontal; while Scheffler's assumption gives the greatest value to the pressure, but the line of action has the greatest inclination to the horizontal. The overturning moments given by Scheffler's rules will be considerably less than those obtained by Rankine's formula.

* Min. Proc. Inst. C.E. Vol. cxcix.

Gravity Wharf and Dock Walls—continued.

Most authorities object to Scheffler's theory for the consideration of walls where the ground at the back is wet.

The formula of Coulomb and Rankine is as follows:—

$$P = \frac{wh^2}{2} \cdot \frac{1 - \sin\theta}{1 + \sin\theta}$$

where P = horizontal thrust on back of wall.
w = weight of earth per cubic foot.
H = height of wall in feet.
θ = angle of repose of earth.

As before stated, Rankine's theory only differs materially from Coulomb's when the earth behind the wall has a sloping surface. In the case of wharf walls the surface of the ground is horizontal and the thrust is always horizontal and acts at one-third above the base.

Scheffler assumes the resultant pressure of the wedge of earth to be inclined at the angle of repose—θ to the horizontal—therefore in this theory we find P as above and take the resultant pressure as the resolved component of P in the direction θ to the horizontal.

Mr. J. C. Meem, in a paper read before the American Society of Civil Engineers and printed in the Proceedings of the Society of August, 1907, discussed the subject of earth pressures and deduced certain rules based upon the fact that the pressure on struts in a trench is less towards the bottom than near the top. His principal deductions were that most consolidated materials will have sufficient cohesion to act as a mass, and that the centre of pressure, of the wedge of earth, is at a distance of one-third the height below the surface instead of the usually accepted position of one-third the height from the base of the wall.

In the discussion on this paper, Mr. E. G. Haines advanced another theory based on observations of slips of earthworks from which he found that the plane of fracture always formed a circular curve. Calculations, experiments and investigations then caused him to conclude that the plane of rupture was semi-circular in section.

Space will not permit of a further description of his theory, but it may be said that it appears to approach very nearly the actual behaviour of thoroughly consolidated or cohesive materials in practice.

The following table for reference gives the Angles of Repose and Weights of various kinds of soils, the values being approximate:—

Nature of Soil.	Angle of Repose—Degrees.	Weight per cubic foot. Pounds.
Water, Fresh at 62° F.	0	62.288
Water, Salt ditto	0	64
Peat	14-45	50-75
Clay—saturated	15	120-130
Earth, vegetable, very wet	17	100-120
Sand, very wet	26	120
Gravel with sand	26	120
Earth, vegetable, dry	29	90-120
Clay, dry	29	110-120
Shingle, loose	29-35	90-115
Sand, wet	32	90-120
Sand, dry and consolidated	35	90-120
Sand, fine, dry, loose	31-37	100
Clay with gravel	38	120-130
Earth, loamy dry consolidated ...	40	80-100
Earth, vegetable moist	45-49	100
Clay, damp well drained	45	120-130
Gravel, clean	48	90-110
Earth, vegetable, dry and consolidated	49	80-100
Earth, vegetable, punned	66-75	100-120

As will be observed from this table, the values vary between wide limits, and again soils of the same kind vary much in consistency and have different values of angles of repose and weights.

The backing of walls may be composed of widely varying kinds of material, and the degree of saturation may vary at different levels.

In the case of dock or quay walls with only a small variation in level of the dock water, the saturation level may be fairly constant, but in the case of wharf walls founded upon a more or less porous strata this level will vary to a greater extent, due to the tidal levels of high and low water, the exact amount depending upon the porosity of the backing material.

As to what composes a porous strata, there is much difference of opinion. There is no doubt that a ballast foundation must be considered as porous, and that water penetrates beneath a wall built upon ballast and may therefore rise with the tide at the back of the wall; the backing therefore becomes saturated to a degree and the wall itself loses weight, both conditions being factors which decrease the stability of the wall.

Owing to the slow rate of percolation, the saturation level behind a wharf wall backed with non-porous material will probably remain more or less in the neighbourhood of half-tide level.

It seems therefore to be good practice in calculations for stability to take account of the lateral pressure of the water at the back at, say, half-tide level, plus the lateral pressure due to that portion of the sliding wedge of earth above half-tide level; that is to say, the dry portion, at its full weight; and to take the wet portion at its weight in water. Strictly speaking, the reduction in the angle of repose of this lower portion due to its saturation with water should be taken into consideration in addition.

During the disastrous flood in the River Thames in January, 1928, many collapses of river embankment walls occurred—some due to the water pressure on the river face of parapet walls, in which case these walls fell inwards. Many, however, were due to the water having reached a level above the top of the embankment or wharf wall, pouring over and saturating the ground behind, then upon the tide falling, the lateral pressure of the saturated material forced the walls outwards, when they collapsed into the river.

The possibility of flooding in tidal waters and its influence upon the stability of wharf walls should therefore not be overlooked.

The writer believes that the collapse of the dock wall at Seaham Harbour in 1903 was also due to this cause—the saturation of the backing material due to heavy seas breaking over the outer harbour wall.

Dr. Luigi Luiggi considers that in order to cause the least possible pressure against the back of a quay wall, it was necessary, at least just near the wall, to employ a material like rubble with the largest angle of repose (45 degs.) and at the same time of such a nature that it lost weight greatly when immersed in water. This practice would appear to be sound, particularly in such situations where it is impossible to preclude the presence of water at the back of a wall, for such a material would in addition suffer very little, if any, reduction in its angle of repose.

This type of backing is very largely used in the construction of walls in the seaports of the United States of America. Drain pipes in the wall are also often incorporated with the use of this type of backing. In tidal waters their complete efficiency is doubtful.

(b) The pressure on the back of the wall due to any surcharge of material or to the loads on the wharf.

The question of surcharge of material does not occur in a wharf, but that of superload due to wharf loads, cargo, cranes, railway stock, and so on, is one which should receive careful consideration.

It is not possible to state a load value for generai application to all situations, because wharf loads may vary within wide limits—from 2 cwts. per square foot to as many as 20 cwts.

Failures in wharf walls have been caused by the wharfingers stacking cargo on the wharf of a much heavier description and in greater quantity, resulting in a loading being imposed far in excess of that which the engineer had been led to believe would be the maximum.

It is thus advisable to design all walls to sustain a wharf load of ample dimensions on the grounds that " it is better to be safe than sorry."

This super or surcharge loading can best be dealt with by considering it as extra material super-imposed upon the wall itself and the filling or backing.

It will be evident that the super load upon the wharf wall itself in effect increases the weight of the wall, while that upon the material above the steps in the back of the wall also adds to the forces which increase stability.

In dealing with the loads from wharf cranes, the front leg, or wheel in the case of travelling cranes, is usually upon the wall top itself, and it appears to be general practice to assume the sphere of influence of such loading as spread over a length of wall equal to the height of same above the base.

This load also increases the stability of the wall. I am speaking, of course, of walls founded upon a solid stratum of adequate bearing strength.

In such cases, where the front leg (or wheel) of the crane comes some small distance away from the wall top, it may still be arranged to be carried by the wall by raising counterforts up from the steps on the back of the wall. The rear crane rail can, in cases of necessity, be carried on a system of piles and reinforced concrete beams.

(c) The pull of ships' moorings on bollards.

The relative importance of the effect of the pull of a ship's mooring on the stability of wharf walls is small, but should, of course, be taken into consideration. The pull of the hawser may be in almost any direction, that in which the maximum effect upon the stability of the wall is experienced being horizontal and at right angles to the wharf face.

The ultimate strength of the hawser itself may be taken as a measure of the maximum pull on the bollards, but the pull can be arrived at by taking the wind pressure on the side of the vessel and dividing the total pressure by the number of bollards holding the ship. The resulting pull on a bollard can then be

Gravity Wharf and Dock Walls.

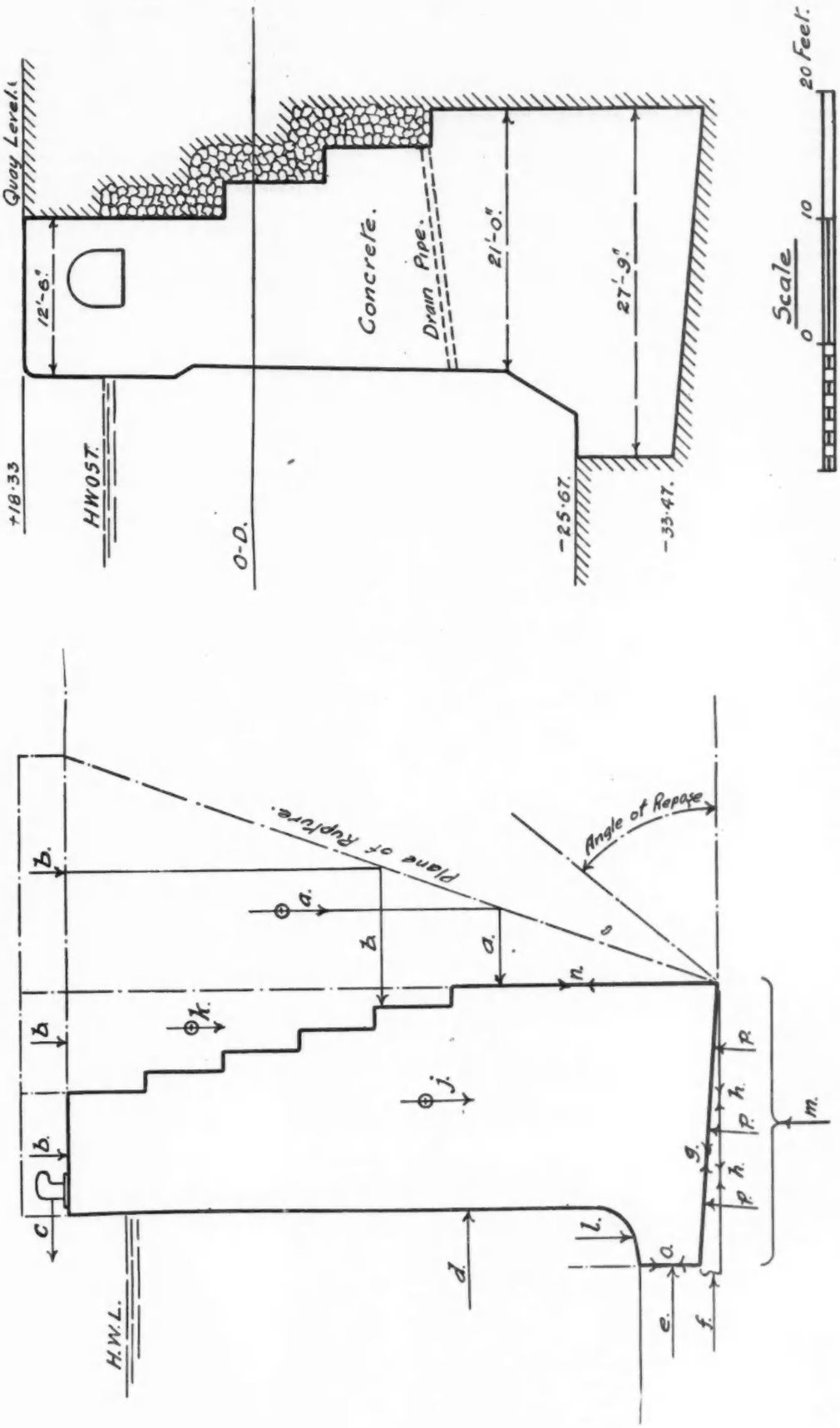


Fig. 2.

Fig. 1.

Gravity Wharf and Dock Walls—continued.

assumed as spread over a length of wall, this length being some multiple of the thickness of the wall at the top or of the height of the wall.

Settlement joints are sometimes arranged at intervals along the wall, and the interval between these can then be taken as the length of wall over which the pull on a bollard can be exerted.

(d) The lateral pressure of water, if any, in front of the wall.

In the case of wharf walls in tidal waters, no assistance to stability should be assumed from this source between the levels of high water and low water, and only below low water when the conditions of construction are such that the water will be upon the face of the wall before the filling and backing are completed.

If the latter is completed first and the wall is built in the dry, the wall may have to stand for a considerable time as an ordinary retaining wall without the assistance of the water which may ultimately be upon the face of the wall.

Unless these conditions of construction are allowed for in the design and calculations, this period may be one of dangerous instability.

(e) The lateral resistance of material, if any, in front of the wall, or in front of the toe of the wall.

Practically speaking, the remarks upon lateral pressure of water equally apply to that of solid material, and conditions of construction must be taken into account in the design.

The assistance due to lateral pressure is usually calculated from Rankine's formulae, the only difficulty being that of determining what value to take as the angle of repose of the material. In most cases it is usually safer to assume that the material is in a dry condition, even though the low tide level of the water never leaves the wall and foreshore dry.

The assistance due to the material in front of the wall is dependent upon the height of such material above the base of the wall; the greater the height, the greater is the resistance to overturning of the wall, while the lateral pressure of the lower part of the material and that in front of the toe tends to resist sliding of the wall, which is also assisted by the adhesion or internal friction in the material in front of the toe; for before the wall can slide on its base it has to shear the material in front of it. In the case of a wall founded in chalk or rock, or even in very stiff clay, the lateral pressure may be nil, but there is still the shear strength of the material to resist sliding.

(f) The lateral resistance due to the slope and/or steps, if any, in the base of the wall.

There appears to be little reason to doubt that the backward slope given to the base of a wall gives additional help in resistance to sliding of the wall, although in some quarters its efficacy has been doubted.

In the case of a horizontal base, the only resistance to sliding—supposing the "outward" forces exceed the "inward" forces—is that due to friction, with, of course, the lateral pressure of material in front of the wall and toe, while in a sloped or stepped base we have the additional lateral resistance of the earth due to the back of the wall being founded at a lower level.

The slope given to the base is usually in the neighbourhood of from 1 in 10 to 1 in 20; in some cases it is made normal to the resultant of all the forces acting upon the wall.

Mr. Wentworth Shields in his paper on the stability of Deep Water Quay-Walls read before the Institution of Civil Engineers in 1921 (Proc. Inst.C.E., Vol. ccxiii.) considers it rational to estimate the value of the resistance to lateral movement due to slope by multiplying the weight on the base of the wall, less the upward pressure of water under the wall, by the rate of the slope.

Other advantages gained by a sloping base are easier drainage of the foundations during construction and a saving in concrete.

(g) Resistance due to friction between the base of the wall and the material beneath it; and

(h) Resistance due to friction between the layers of material beneath the base of the wall, and/or the assistance due to friction or adhesion in the materials themselves.

There appear to be more cases of failures of walls due to sliding than to any other cause, and most seem to have occurred where the walls were founded upon clay; this tendency therefore must be specially guarded against. It can be overcome or at any rate the tendency can be lessened by the adoption of a sloping or stepped base, as before-mentioned, but the fact must not be lost sight of, that a wall may slide not between its base and the underlying material, but that sliding may occur between different strata, and even by the forces at the back of the wall causing cleavage in the materials themselves.

In general, however, the internal friction or adhesion in the materials themselves is the greatest, and a failure by sliding at the base of the wall is the most to be feared of the two former possibilities.

The tendency to slide is usually estimated by subtracting the total "inward" forces from the total "outward" forces, and theoretically this unbalanced force must not exceed the frictional resistance between either the base of the wall and the material beneath it, between different layers of materials or of the materials themselves.

In designing a wall it would be best, if possible, to ignore the assistance given to stability by friction, owing, firstly, to the fact that the inclusion of frictional resistance pre-supposes a wall of unstable equilibrium, and, secondly, to the extreme difficulty of correctly estimating the co-efficients of friction between materials under wall construction conditions.

A definite balance of the more direct and tangible forces is therefore best sought for by a modification in design.

In this connection, with a correctly designed sloping or stepped base, the resistance due to the materials in front can safely be taken as a definite force resisting sliding.

(j) The weight of the wall.

(k) The weight of the backing resting on the back of the wall.

(l) The weight of water above the toe.

(m) The upward pressure of water under the base of the wall; i.e., the buoyancy of the wall.

Within the limits of safe bearing pressure of the wall foundations, additional weight in the wall provides an increase in stability provided the weight is properly disposed.

The weight of the backing or filling contained within the space between a vertical line through the heel of the wall and the back of the wall, whether sloping or stepped, assists in maintaining equilibrium.

This material may be dry or may be wet due to the standing water level up to a certain height above the base of the wall. In the latter case the weight in water of the materials must be taken. In this case the lateral pressure due to the water will have been taken into account in estimating the lateral pressure of this wedge of backing material.

The weight of the water above the toe of the wall must be taken into account if low water level does not leave the face of the wall.

As to whether it is necessary to take the buoyancy of the wall into consideration depends upon the nature of the foundation upon which the wall is built.

If the material upon which the wall rests is at all porous, such as gravel, the loss of weight of the submerged portion of wall due to being immersed in water must certainly be taken into account in the calculations for stability.

This consideration applies in all cases where the level of the water on the front of the wall does not fall below the base line of the wall; but when the wall is left dry by the tide such wall will be less stable during that state than when partially submerged. See also remarks under (d).

(n) The friction between the backing and the back of the wall.

There appears to be much diversity of opinion as to the consideration to be taken of this force. That friction exists there can be no question, and that if considered in the calculations for stability it seems it should be assumed to be a force acting parallel with the back of the wall.

The value of this frictional resistance is most indeterminate, and, moreover, with a saturated backing must be very small.

It would appear to be the better practice to ignore it altogether, for it seems reasonable to suppose that its effect upon the resultant thrust of the wedge of backing material tending to overturn the wall is very small, and that in practice it cannot come into play unless the back of the wall is tending to rise; that is to say, when the wall is tending to overturn about its toe. In this case the wall is in an unstable condition and undoubtedly of unsafe design.

(o) The friction between the toe and material in front of it.

The above remarks apply almost equally to the consideration of frictional resistance between the toe and surrounding material, the material in front of the toe of a wall is probably always saturated and frictional resistance will be minute, while it cannot be in evidence until the toe begins to move. It should therefore be ignored.

(p) The upward resistance of the material under the base of the wall; that is to say, the bearing pressure of the material.

The upward resistance of the material under the base of the wall is, of course, the difference between the total upward forces and the total downward forces. This difference will be the total pressure upon the material under the base of the wall which at any point must not exceed the safe bearing pressure of the strata upon which the base rests.

The last stage in the design of a wall is the determination of the magnitude, position and direction of the resultant of all the forces present. From these values the distribution of pressure over the surface of the ground below the base of the wall can be found. It is usual to assume that the position of the resultant of all the forces must pass within the middle third of the base of the wall, the theory being that when the resultant passes through the middle third the pressure is distributed over the base with an absence of tension at the heel of the wall.

It is possible, of course, for the position of the resultant to fulfil the above stipulation, but for the intensity of pressure at

Gravity Wharf and Dock Walls.

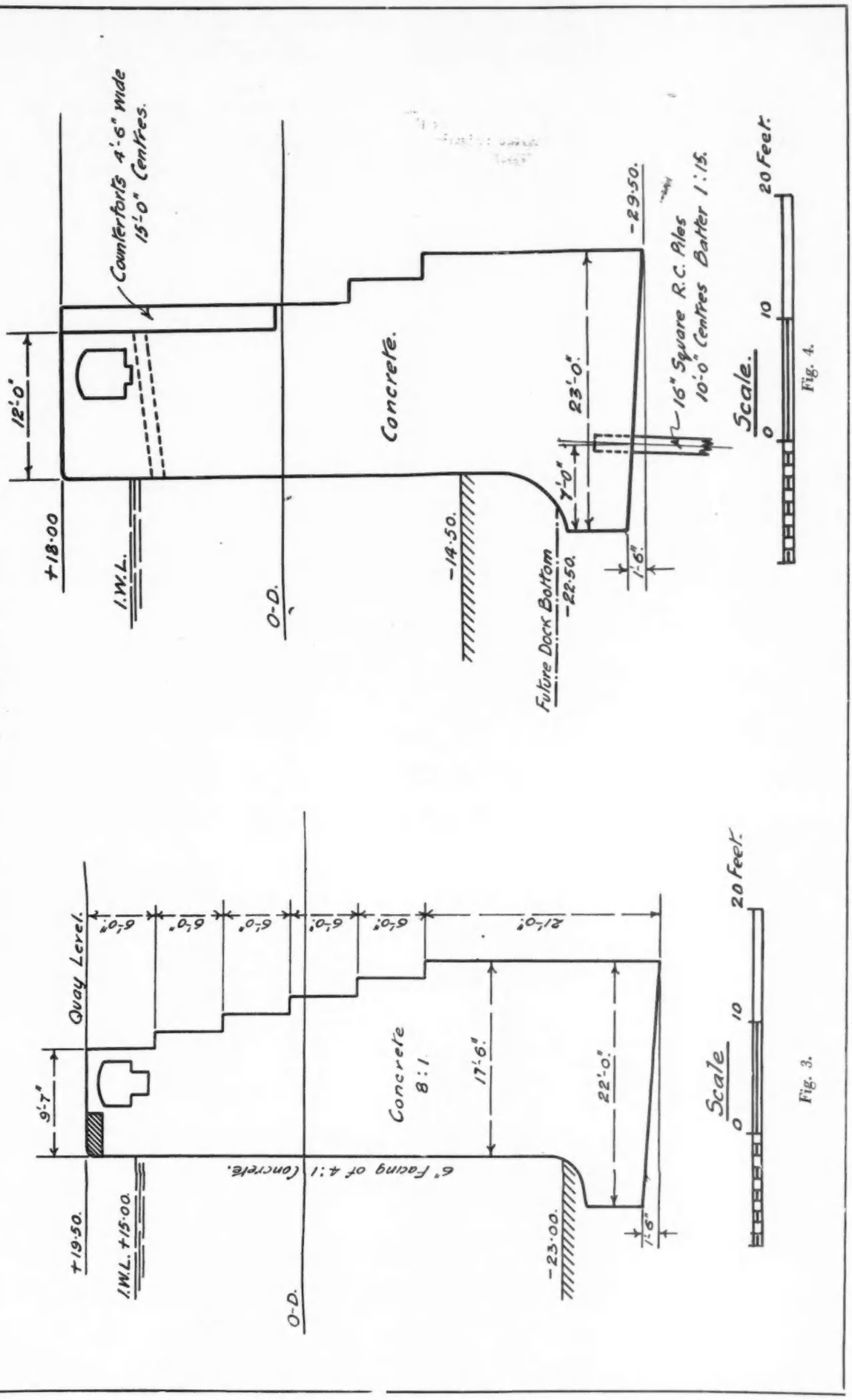


Fig. 4.

Fig. 3.

Gravity Wharf and Dock Walls—continued.

the toe to exceed the safe limit of stress of the strata and this is one of the main points to watch; another is that the pressure at the heel must be in excess of any upward pressure caused by the tendency of the backing to slip down and cause the ground to upheave at the heel.

One way to secure a reduction in intensity of pressure at the toe is by extending the toe; and again this end may be secured by reducing the section of the wall, care being taken that the strength of the wall is unimpaired and that the reduction of section is secured in the proper place.

The inclination to the vertical of the resultant of all the forces should not exceed the angle of repose of the material forming the backing; this condition will tend to ensure that the wall will not slide bodily forward on its base.

As mentioned in section (f), the base of a wall is often made normal to the resultant, or given a slope of from 1 in 10 to 1 in 20, or " stepped."

The foregoing remarks on calculations refer specifically to solid " gravity " walls. Walls of other types and monolith walls and foundations will need treatment on somewhat different lines according to the types involved; the principles of earth pressure, however, of course, apply to all types of construction.

In conclusion, Mr. W. T. Chamberlain, M.I.C.E., in the March, 1923, issue of *The Dock and Harbour Authority* gives some suggestions for design based on his experience at the Port of Belfast. These suggestions appear to be very sound, and, carried out, have apparently been attended with satisfactory results at Belfast where conditions as to strata and harbour and dock wall building are particularly unfavourable. Mr. Chamberlain's remarks are as follow:—

" (a) The pressure of water up to low water level on the front of the wall should be neglected.

" (b) The pull of ships moorings may be omitted, as it is balanced by (a).

" (c) To simplify calculations, the pressure of earth behind the wall may be assumed as starting from the level of the dock bottom. This will be found to be practically the same as calculating the total pressure on the back of the wall from foundation level, and then subtracting the inward pressure due to material in front of the toe of wall, and is much simpler.

" (d) Due allowance should be made for pressure of water behind the wall, and in cases where there is water pressure in front, for the unbalanced difference, viz., between high and low water levels.

" This is a wise precaution, for although it is good practice to provide weep holes to drain the backing for calculation purposes, the worst possible conditions should be assumed. The weep holes might easily get blocked up and cease to operate.

" (e) Factor of Safety. This should be based on well-recognised principles and is one of the most important items to be considered. It should have some definite numerical value over above provision for worst possible conditions. . . . .

" The maximum superimposed loads to be allowed need not be exaggerated, as these are not likely to be encountered until the strength of the wall has increased and the thrust of the backing diminished.

" It would probably be found a wise plan to separate the Factor of Safety into three divisions:—

" (1) Overturning moment.

" (2) Sliding on base.

" (3) Pressure on foundations."

" Each to have its own numerical value which would depend on the particulars in each case, and would be a matter for individual judgment."

Examples of Gravity Walls.

The illustrations show some dock walls representative of construction in recent years.

Fig. No. 2 shows in cross section the wall of the King George V. Dock at Hull, built in 1914.

The back of this wall at intervals along its length is packed with block chalk, so forming drains which together with the drain pipes through the wall ensures that there is no unbalanced hydraulic pressure on the back of the wall.

In Fig. No. 3 is shown the cross section of the type of wall used in the North, East and West Quays of the King George V. Dock, London, completed in 1921 by the Port of London Authority.

The walls were founded generally upon ballast or chalk, the calculated maximum pressure at the toe is 5 tons per square foot. Ballast obtained over the site of the dock was used as filling or backing behind the walls.

Fig. No. 4 shows the cross section of the mass concrete dock walls of the reconstructed Quebec Dock in the Surrey Commercial group of docks controlled by the Port of London Authority. This work was completed in 1928.

The foundation of these walls was upon ballast, and ballast obtained over the site was used as backing.

16-in. square reinforced concrete piles were driven at 10-ft. centres, 7-ft. from the toe of the wall, battered 1 in 15; 12-in. earthenware drain pipes were incorporated at intervals along the walls to reduce the hydraulic pressure at the back of the wall.

Bombay Port Trust.

At a Meeting of the Trustees of the Port of Bombay held on 22nd April, 1930, the following were the main items of business disposed of:—

The preliminary report on the Revenue Receipts for the year ending 31st March, 1930, was considered. The total collections amounted to Rs.280.18 lakhs, being Rs.5.69 lakhs above the original budget figure.

Owing to the surtax having been reduced from 50 per cent. to 33⅓ per cent. from 1st April, 1929, the actual receipts for 1929-30 were less than those of the preceding year by Rs.5.89 lakhs. But for the reduction in surtax the revenue for 1929-30 would have been nearly Rs. 11 lakhs higher than the record figure of 1928-29. Excluding surtax, the receipts under all Major Departments are greater than the previous year. The principal increases are under the head of Bunders, Land and Railway.

The original Budget Estimates for the year anticipated a deficit of Rs.4.71 lakhs; in the revised Budget Estimates this figure was reduced to Rs.1.56 lakhs. As the actual receipts are somewhat better than the revised budget estimate, and as savings are expected in revenue expenditure, it is hoped that the final result of the year's working will be a small surplus of Rs.1 to 2 lakhs.

The Trustees passed a resolution regretting the resignation of their colleague, Mr. F. C. Annesley, and recording their appreciation of his services to the Port of Bombay during his 9 years tenure of office as a Trustee. The election of Mr. E. C. Reid by the Chamber of Commerce as a Trustee *vice* Mr. Annesley was also recorded.

Estimates of expenditure for the following works were sanctioned against the relative budget provision:—Rs.66,000 for special repairs to hydraulic cranes in the Docks during 1930-31; Rs.7,000 for removing certain hydraulic pressure pipes in Victoria Dock.

At a meeting of the Trustees of the Port of Bombay, held on 6th May, 1930, the following were the main items of business disposed of:—

A Government Notification was recorded appointing Mr. E. Fraser, A.M.I.C.E., as a member of the Board of Trustees *vice* Mr. D. S. Burn, M.Inst.T., on leave.

Mr. R. McMurray, Mechanical Superintendent, was granted six months' leave with effect from 9th June, and Mr. R. B. McGregor, Senior Assistant Mechanical Superintendent, was appointed to act as Mechanical Superintendent.

Estimates of expenditure for the following works were sanctioned against the relative budget provision:—

(1) Rs.2.95 lakhs for maintenance renewals of rails and sleepers on the Bombay Port Trust Railway during 1930-31.

(2) Rs.11,000 for renewal of deck of Floating Crane " Sarus."

(3) Rs.28,800 for renewing roofs of C, D and F sheds, Prince's Dock.

The Board considered a reference from Government forwarding a draft Convention concerning the protection against accidents of workers employed in loading or unloading ships, which was adopted by the International Labour Conference at Geneva in 1929; the Trustees decided to inform Government that they saw no objection to ratification of the draft Convention and such legislative enactments as may be necessary to make it effective.

Annual Dinner of the Institute of Transport.

The Institute of Transport announces that its Eleventh Annual Dinner will take place at the Connaught Rooms, Great Queen Street, London, W.C.2, on Thursday, March 5th, 1931.

The Port of New York.

Latest Data issued by the Bureau of Commerce.

Value of Foreign Commerce at Port of New York.

THE continued slump in the foreign trade of the United States was shown in the drop in the foreign trade at the Port of New York during February. The value of foreign commerce at New York in the month was $280,658,000, a decline of $94,487,000, or 25 per cent., as compared with February, 1929. Exports were $143,659,000 in comparison with $187,045,000 in February of last year, and imports were $136,999,000, as against $188,100,000 in the corresponding month of 1929.

More than half of the decline in value occurred in automotive exports, which fell off from 44 millions in February, 1929, to 20 millions, or 54 per cent.

Grain Exports.

Grain for export continued to move out of the country in smaller volume than a year ago. The total grain movement, both domestic and Canadian, at New York during the month of February was 3,608,000 bushels, compared with 8,547,000 bushels in February, 1929. This decline of 4,939,000 bushels, or 58 per cent., is, however, less than the decline noted for the whole of the United States, which is 61 per cent.

	February		Net Change	
	1929 Bushels	1930 Bushels	Bushels	Per Cent.
Through the Port of New York—				
Domestic and Canadian Grain	8,547,000	3,608,000	4,939,000	57.8
Domestic Grain	1,400,000	276,000	1,124,000	80·3
Canadian Grain	7,147,000	3,332,000	3,815,000	53.4

Commerce at Port Newark.

An increase in the quantity of lumber handled at Port Newark during the month of March, 1930, as compared with March of 1929 is noted. A total of 18,419,428 board feet were handled in and outbound during the month in 1929, while 20,577,125 board feet were similarly handled in March of this year, being a gain of 2,157,697 board feet, or 11.7 per cent.

The number of steamers arriving during the month were 21, as against 28 in March, 1929.

Steamship Passenger Movement over Foreign Routes.

The number of passengers travelling to and from foreign countries via the Port of New York during the months of January and February, 1930, showed an increase over a year ago.

Incoming passenger arrivals decreased slightly, but departures jumped 10,000 in January and approximately 4,500 in February, making a net increase for the first two months of 1930 of 10,000 passengers, or 10 per cent. more than a similar period in 1929.

Steamship Sailings.

The peak day of the month was Saturday, March 29th, with a total of 94 sailings, 43 of which cleared direct to foreign ports; 8 more cleared for foreign ports via all domestic outports, and 43 for domestic ports only.

Although sailings from the Port of New York had not reached their usual seasonal peak, which comes later in the Spring, it is interesting to note that the direct clearances for foreign ports from the Port of New York on that single day almost equalled in number the total vessels clearing direct for foreign ports from Baltimore for the entire month of March.

Vessel Movements in Foreign Trade.

Entrances and clearances of vessels in foreign trade at the Port of New York during March were less than for the corresponding month in 1929. A gain, however, is noted in the net tonnage of vessels entering.

	March, 1930.		March, 1929.	
	No. Vessels.	Vessels Tonnage.	No. Vessels.	Vessels Tonnage.
Entrances	564	2,562,043	581	2,446,697
Clearances	576	2,524,972	606	2,611,358

The ships arriving at the Port of New York are larger and faster than ever before. Within the last month the "Europa" established a new record for the run from Cherbourg to New York of 4 days 17 hours and 6 minutes, smashing by 18 minutes the record established in October by the "Bremen." The size of the ships, as well as speed, has increased consistently since 1900 except during the war period. The average tonnage per vessel entering the Port of New York in 1929 was more than double that of 1900.

Year.	No. of Vessels Entering.	Net Tonnage of Vessels Entering.	Average Tonnage per Vessel.
1900	2,233	8,206,399	1,939
1905	3,874	9,735,090	2,513
1910	4,166	13,169,973	3,161
1915	4,446	12,579,317	2,829
1920	5,283	17,404,188	3,294
1925	4,639	19,209,707	4,141
1929	6,928	30,512,353	4,404

The larger ships require wider and deeper channels, provision of safe anchorage grounds away from main channels, construction of longer piers, all of which the Port Authority is seeking to achieve either by securing approval of channel improvements from Congress or by its own pier construction programme.

Volume of Inter-Coastal Traffic.

The volume of intercoastal traffic between Pacific coast ports and ports on the Atlantic seaboard for the fiscal year ended June 30, 1929, amounted to 8,990,331 long tons, only 43,626 tons, or one-half of one per cent. less than for the previous fiscal year.

The Port of New York handled 3,792,872 tons, or 42 per cent. of all the intercoastal traffic of the Atlantic seaboard.

The intercoastal trade at the Port of New York consists mainly of lumber. During the period April to June, 1929, 316,218 tons, or 236,110,000 board feet were received at New York, being the highest point reached since the corresponding period in 1928, when 381,329 tons, or 284,727,000 board feet were received.

During the fiscal year ended June 30th, 1929, the shipments of lumber from the Pacific coast to ports on the Atlantic seaboard amounted to 2,224,220 long tons, or 1,660,758,000 board feet. Of this amount, 1,168,503 long tons, representing 872,486,135 board feet, or 52.5 per cent., was unloaded at New York.

New York State Barge Canals.

The New York State Barge Canal opened for navigation on April 7th for the season of 1930.

The report of the New York State Department of Public Works for the season of 1929 shows that the traffic established a record for commodities except grain. Due to the general decline in shipments of grain for export on account of the unfavourable world situation, the total tonnage handled on the canal system fell slightly below that of 1928.

	Short Tons		Net Change	
	1929	1928	Amount	Per Cent.
All Commodities ...	2,876,160	3,089,298	—213,838	—6·9
Grain	842,031	1,182,077	—340,046	—28·8
Other Commodities ...	2,034,129	1,907,921	+126,208	+6.6

Gains in flaxseed, sulphur, and iron or steel articles point to an increasing demand for canal facilities.

Despite the drop in grain traffic on the canals, the elevator at the State Barge Canal Terminal on Gowanus Bay unloaded 14,123,921 bushels of grain, as against 9,652,073 bushels in 1928, showing a gain of 46.3 per cent.

Bremen's Sea Traffic in April, 1930.

Bremen seagoing vessel traffic arrivals during April amounted to 707,296 net register tons. This is 25,134 net register tons, or 3 per cent. less than that of the previous month, but slightly more than April, 1929. During the first four months of 1930 traffic was with 2,867,705 net register tons more than during the same period of the previous year by 33,895 net register tons, or 1 per cent.

Seaborne goods traffic of the five most important Weser ports was unfavourable during the month under report, due to the generally bad economical conditions. There was a considerable decrease in grain supplies, arrivals of oilseeds as well as a seasonal decrease in the transport of potash. Imports and exports, therefore, were considerably weaker than in March and April of the previous year. Imports amounted to 355,300 tons, a decrease of 40,000 tons and 12,900 tons respectively in comparison with the same months of the previous year; exports with 178,700 tons decreased by 10,100 tons and 26,700 tons respectively.

During the last four months 2,231,900 tons were imported and exported, or 66,100 tons more than in the same period of the previous year. Of the increase 47,400 tons fell to imports and 18,700 tons to exports. The increase in traffic which, in the first quarter-year amounted to 7 per cent. in both directions, has, therefore, decreased 4 per cent.

Notes from the North.

Rat-proof Dock Sheds.

WITH the exception of a few of the old docks in the central district of Liverpool, the wharves on the dock estate are of rat-proof construction, made with ferro-concrete and stone, the roadways and pavings of the sheds being setts on a concrete foundation. The sheds are built of brick and reinforced concrete. All the sheds in the new Gladstone Dock are constructed solely of reinforced concrete, and there are no ledges, beams or angle iron on which rats may run. All offices and wooden huts in the sheds are made rat-proof either by being lifted 18-in. clear of the ground or sheathed with iron or cemented round the base. New offices or other buildings are either built on brick or concrete piers clear of the ground or the base is built hard and close to the paving of the shed. Certain new offices in the Gladstone Dock system may be stated to be as near to the ideal as possible, from a rat-proofing point of view. These offices are built solidly of brick and have a vertical course of expanded metal between the outside and inside courses of brickwork, the whole of the work being bonded by special ties of steel wire. The Mersey Docks and Harbour Board and the various shipping companies are fully alive to the necessity and benefit of rat-proofing, and practically all sheds, huts, offices and warehouses on the dock estate have now been made rat-proof. Constant supervision is required, however, in the case of stores, otherwise they tend to become harbourages for rats. Samples of the rat population from the Liverpool dock quays, sheds and warehouses are obtained daily, and all rats so caught are submitted to the city bacteriologist for examination.

All vessels with the exception of coastwise vessels must have rat-guards affixed to their moorings during their stay in the port. The rat-guard used and approved of by the Port Sanitary Authority consists of a disc of galvanised sheet iron, 1/16-in. thick and 3-ft. in diameter. The edge is left raw, i.e., not wired or turned over. In the lower half is cut a door hinged and so fastened when shut that no foothold is afforded to rats. The door slit leads to the central hole through which the rope passes. Round the central hole is placed a strong collar projecting about 4-ins. on one side and riveted to the disc. In the collar is a strong steel spring clip, which can be adjusted by means of a winged nut and bolt. To apply the guard, the door is opened and the guard put over the rope, so that the latter passes up into the central hole, where a little force is necessary to overcome the spring of the clip. The guard will now hold quite firmly and the bolt and screw closing the opening of the clip gives additional security. The door is then closed and fastened, the upper edge being fitted with a piece of thick sheet rubber attached so as to close completely the central hole whatever the size of the rope in use.

These interesting comments appear in the annual report, issued a few days ago, of Dr. A. A. Mussen, Medical Officer of Health, Liverpool Port Sanitary Authority.

Personal.

Mr. J. G. Parkinson, junior assistant engineer with the Isle of Man Harbour Commissioners, has been appointed junior engineering assistant to Westmorland County Council.

Lower Master Porterage Rates.

Mersey Docks and Harbour Board have adopted revised master porters' rates in respect of coir fibre and coir yarn. The new rate came into operation on 20th May.

New Isle of Man Dock Scheme Proposed.

At the quarterly meeting of the Peel Advertising Board, Mr. C. R. Shimmin, H.K., J.P., commented on the proposed Peel dock scheme. He said that Mr. Blaker, the harbour engineer, had prepared plans for the dock at Peel and the estimated cost was in the neighbourhood of £40,000. The dock, when completed, would be able to take seven of the largest of the Steam Packet Company's boats. Mr. Shimmin urged that the matter be brought forward as a national scheme and not a local scheme, and strongly advocated that newspaper publicity would help most considerably in the matter. The meeting decided to ask the Peel Commissioners to send a deputation to the Harbour Board.

Glasson Dock.

It is understood that the L.M.S. Railway Co.'s branch line from Lancaster to Glasson Dock will shortly be closed for passenger traffic. This single-line branch railway, opened in 1887, is five miles in length with a halt at Conder Green, and, running for the most part alongside the Lune estuary, connects the county town with Glasson, which, at the mouth of the river, forms a port for Lancaster, having been equipped with a dock since 1787. It has also, since 1826, been connected by a branch waterway with the Preston and Lancaster Canal at Galgate.

Manx Pier Extension.

The Manx Harbour Commissioners are proceeding with the work of extending the Red Pier which will be carried on throughout the summer. Dredgers have been sent from Southampton to commence the dredging at the head of the Pier.

Collapsed Elevator.

One of the elevators fixed to a warehouse at East Waterloo Docks, Liverpool, and used for passing grain to flats, suddenly collapsed recently and from a great height fell into the water. Fortunately nobody was near at the time. Arrangements had been made previously to berth at the spot a steamer inward with a grain cargo.

Awaiting the Word "Go."

Word is anxiously awaited from the Government to permit a start being made on new Liverpool and Birkenhead dock development schemes. At a recent meeting of the Mersey Docks and Harbour Board, information was sought by members as to the present position regarding the schemes at Birkenhead and Clarence Dock, and whether there was the prospect of any development in connection with them in the near future. The chairman replied that the present position is that one of the schemes (the Clarence Dock scheme) is held up owing to certain modifications, which have not yet been passed by the Government Committee. Referring to the Vyner's land scheme, Birkenhead, where a new dock is to be made, and the schemes for new bridges on both sides of the river, the Government had not yet agreed as to the date on which the schemes are to be completed. This, of course, had a bearing on the question of interest and work could not be started until the matter was settled. The Dock Board schemes on both sides of the river involve an expenditure of £2,000,000, and they include the making of a new dock alongside the East Float and the filling-in of portion of the present Wallasey Pool. On the Liverpool side alterations are to be made to the Clarence half-tide and graving dock basin, the removal of the Trafalgar lock and the deepening of the passages leading to the West Waterloo Dock. Four new bridges are also to be erected.

Bridge or Tunnel?

As a counter-proposal to the projected high level bridge over the Manchester Ship Canal at Barton, the Trafford Park Traders' Association puts forward a considered suggestion that there should be substituted at a point about three-quarters of a mile farther west, a two-way or twin tunnel under the Canal. This new proposal, with appropriate plans and explanatory arguments, has been forwarded to the Lancashire County Council, Manchester and Salford City Councils, a number of other local authorities concerned, the local Members of Parliament, business undertakings, transport corporations and the Ministries of Transport and Health.

Erosion of Mersey Banks.

A £150,000 scheme to remedy the trouble of Mersey banks erosion, which has a detrimental bearing on land drainage over a considerable area is under consideration. The scheme originated with the Stratford U.D.C., but its details have been mainly worked out by the Cheshire County Council. It is proposed to provide six by-pass channels between the junction of the River Mersey with the Manchester Ship Canal and Chorlton-cum-Hardy, to relieve the pressure on the banks at the worst of the bends. These by-pass channels are to be capable of taking about 2,000 cubic ft. of water per second in time of heavy flood, the inlets to be protected by masonry so that the river will not cut itself a way through. Particular care will be taken to protect the bottoms of the new channels at their inlets, to prevent their being eroded, and in some cases to take up any superfluous fall there may be. A few of the worst bends in the old channel will be taken out, as it is intended to use the existing channel as well as the new cuttings. It is intended to lower the sill of the weir just above the Bridgewater Canal crossing and to enlarge the embanked channel, which thereabouts discharges into a very small brook and to connect the channel direct with the Mersey. The work will be carried out under the Unemployment Relief Works Act, provided that it is certified as of public utility.

Harbour Works at Barmouth.

The Demolition and Construction Co., Ltd., of London, has tendered successfully for the important works to be carried out at Barmouth. This contract amounts to £126,980, and covers promenade, sea walls, and roads construction, and dredging Barmouth Harbour.

Notes from the North—continued.

Fleetwood Scheme Completed.

To mark the consummation of two years' efforts to render Fleetwood immune from tidal inundation and the completion of the new sea defence wall, Lord Derby unveiled commemorative tablets. The sea defence wall is 1,940 yards long and has been constructed at a cost of £60,000. It has a width varying from 13 to 17-ft. and is calculated to withstand a tide of 38-ft., or 8-ft. higher than any previously known around the coast. Along the top of the wall has been formed a promenade which will form a link in the 20-mile-long promenade which will eventually stretch from Fleetwood in the north, through Cleveleys and Blackpool, to Lytham St. Annes in the south.

Morecambe Harbour.

Morecambe Corporation has had under consideration a report dealing with the development of the Old Harbour. Payments for sinking fund and interest contributions on the purchase cost of the Old Harbour from the Railway Company (£34,000), on the basis of a 60 years loan as authorised by Parliament, amount to £1,908 per annum, and the loan period for the actual construction of works or development depends upon the sanction of the Ministry of Health, according to the type of work. It is expected, however, that the period will not be less than 30 years, upon which assumption the annual loan charges on £32,550 (that is £30,000 and £2,550 architect's fees) will be £2,311 per annum. An interview has taken place between representatives of the Council and the London, Midland and Scottish Railway Company, when it was agreed that it would be desirable for the scheme of development and the building of a new hotel by the railway to proceed in unison.

It was recommended that the Borough Surveyor be instructed to prepare a scheme and estimates for the continuation of the Promenade in front of the Midland Hotel to join up with the existing Promenade at a point west of the hotel, which would have regard to future works which may be required for the adequate protection of the existing sea wall.

Mersey Tunnel Progress.

Messrs. Basil Mott and J. Brodie, joint engineers to the Mersey Tunnel Committee, on 14th May, reported to the Committee that the whole of the upper half of the cast-iron lining of the under-river section is now in place and that about 83 per cent. of the lower half has been completed. This is 15 per cent. ahead of schedule. On the Birkenhead side 72.3 per cent. of the total excavation has been done, the work being ahead of schedule. The construction of full-size tunnels on the Liverpool side is also in advance of the time table, the excavation to date being 53 per cent. of the total. Of the three contracts now running 66.5 per cent. has been done of the value of £1,882,700. The number of men engaged is 1,490.

Dock Warehouse Rates.

Mr. E. B. Orme, in proposing the adoption of the proceedings of the Warehouse Committee at a meeting of the Mersey Docks and Harbour Board, referred to the triennial revision of the warehouses schedule of rates, rents and charges. He said that in connection with the revision of the warehouse rate book there had been very few alterations to make, owing to the extensive alterations which had been made in the rates since the last revision, which took place in 1927, the principal alteration being a reduction in the leading rates and rents on tobacco which involved an estimated loss in revenue of £21,700 per annum, without any corresponding reduction in wages. Certain other minor reductions were made in the rates applicable to sugar, grain, wines and spirits, rubber, etc., without any corresponding reduction in wages, also the loss in revenue being estimated at approximately £1,000 per annum.

Bromborough Dock.

" In a few months we anticipate that the Bromborough Dock will be available for use and it cannot be made too widely known that we offer to manufacturers some very valuable sites on the Bromborough Port estate adjacent to the dock, which carry with them a unique combination of amenities and facilities for the receipt of imported raw materials and the despatch of finished goods."—Mr. F. D'Arcy Cooper, chairman, at the annual meeting of Lever Bros., Ltd., at Port Sunlight.

Ribble Dock Undertaking.

The traffic revenue of the Ribble undertaking last year amounted to £243,901, the highest total yet reached in the history of the undertaking. This sum is £7,000 in excess of the abnormally high revenue which accrued during the coal dispute in 1926-7, due to the importation of coal and coke. After payment of all working expenses, a surplus of £61,600 is available towards payment of the interest and sinking fund charges, which amount to £87,100 or slightly over 5 per cent. on the debt outstanding. According to a statement by Councillor F. Jamieson, Chairman of the Ribble Committee, 90 more vessels had been dealt with than last year, and there had been an increase in the net registered tonnage total of 53,086 tons. The increase over 1914 was 155,446 tons, largely due to the increase in the size and number of vessels arriving from foreign ports. In 1914 the total number of vessels arriving from foreign ports was 190, with an average net registered tonnage of 723. Last year the number was 227 and the average net registered tonnage per vessel 1,029. This year the number increased to 245 vessels, average net registered tonnage per vessel 1,098, so that the increase over 1914 amounted to 375 net registered tons per vessel. The average size of the foreign vessels now using the port had increased by half as much again when compared with pre-war. The number of vessels of deeper draught, too, was increasing. Of the 90 more vessels dealt with this year, 35 of them were from foreign ports with a draught of 17-ft. and up. Last year 113 vessels of such draughts were dealt with. This year there were 148. Six of them were over 21-ft. compared with one last year. All this clearly indicated that larger vessels were now arriving with greater regularity. The imports totalled 672,458 tons, showing an increase of 83,922 tons over those of last year, and all the principal traffics showed increases for the year. Wood pulp imports amounted to 251,776 tons, the highest import of this traffic in any one year, the previous record being 224,631 tons. There was an increase of 21,503 tons in the import of timber, 13,916 tons of stone, 6,525 tons of grain, 5,629 tons of motor spirit, 2,162 tons of china clay and 1,560 tons of esparto grass. The total import of motor spirit for the year was 103,199 tons and when it was remembered that it was only in 1923 that the traffic commenced in appreciable quantities, the rapid growth would be more clearly understood. The various companies concerned already had storage accommodation for 27,500 tons, equal to 8¼ million gallons, and further developments were likely. Turning to livestock it would be remembered that about 12 months ago the shipping company replaced the " Lady Brussels " by the " Lady Meath " and the Corporation had to extend the facilities at the lairage. This steamer has now been running a full year and the import had shown an increase of 23,482 animals. The total import was 81,790 animals, and this had justified the expenditure involved. The increased import of grain was no doubt due to the erection of a grain elevator by Jos. Pyke and Sons (Preston) Ltd., who had just completed the first full year's use of the plant. The committee during the year had spent further money in providing additional facilities for the storage of timber, and this, while being an added source of revenue, had also been much appreciated by the timber trade, who were anxious for the further extension of shed facilities. Exports had declined by 1,027 tons this year, entirely due to the decreased shipments of coal and coke, but the considerable improvement during the last three months warranted some hope for a better result in the coming year. Total imports and exports showed an increase of 82,895 tons.

Costly River Wall.

Liverpool Corporation has obtained the formal sanction of the Minister of Health to the borrowing of the sum of £114,800 in connection with the construction of the River Wall and Embankment on the Otterspool Estate, Liverpool; also for the sum of £8,500 for the construction of sewers in connection with the river wall and embankment scheme on the Otterspool Estate.

Birkenhead Ferries.

Birkenhead Corporation Ferries Committee has adopted a report by the ferries manager embodying recommendations as to the reductions or rebates in the ferries charges in order to conform with the Local Government Act, 1929, requiring freight transport undertakings to allow reductions or rebates corresponding to the rate relief afforded to them by the operation of the de-rating provisions of the Act. On credit accounts, a rebate of 12½ per cent. will be made and on pre-paid freight tickets a rebate of 12½ per cent.

Grain Storage.

Dealing with the difficulty of finding adequate warehouse accommodation for the huge quantities of wheat entering the Mersey last Autumn, the directors of the Liverpool Corn Trade Exchange, Ltd., in their annual report, acknowledged the assistance rendered by the Mersey Dock Board in providing additional accommodation and added that, as a result of negotiations with the Manchester Ship Canal Company, sellers will be able in July and onwards to tender ex the company's Manchester silos or warehouses. Buyers in Liverpool, Birkenhead and Ellesmere Port will not, in any way, be prejudiced by the wheat being in Manchester and not in the port of Liverpool. The additional accommodation provided under the agreement appears to be for all practical purposes unlimited, adds the report.

Notes from the North—continued.

Progress of Clarence Dock Works.

By the end of this year or early in 1931, the new Clarence Dock Power Station of the Liverpool Corporation should be in commission. For the present, only a portion of the site of eleven acres is being developed. There are 560 Liverpool workmen engaged in sinking foundations, boring tunnels and erecting the steel girders such as those required for the huge turbine house which at the moment, although only in skeleton form, constitutes the most conspicuous object on the site. Two tunnels under a portion of the dock wall are being extended by the Dock Board to the riverside. These and the four ducts or smaller tunnels, which are now approaching completion, are intended to supply the water from the river; 15,000,000 gallons of water per hour will be required. The water will be drawn from the river at a point some 400-ft. away and will be returned through two ducts at the Trafalgar lock. The coal silos, which are rapidly taking shape and the coal sidings are designed on the most up-to-date lines.

An arrangement has been made by the Clarence Dock Power Station Special Committee of the Liverpool City Council with the Mersey Docks and Harbour Board for the substitution of a concrete river wall in place of the wall and pillars originally provided for at Clarence Dock. This means an additional expenditure of £4,000 but an ultimate saving of about £3,000. The Dock Board will bear one quarter of the cost of this work.

Liverpool City Council has decided to ask the sanction of the Electricity Commissioners to borrow £135,000 to be expended on the distribution of current from the new Clarence Dock generating station into the central area of the city. Switchgear will cost £81,000, plant £40,000, buildings £10,500 and coupling up and contingencies £3,500.

The Clarence Dock Power Station Special Committee of the Liverpool City Council has accepted the following tenders:—Messrs. James C. Kay and Co., Ltd., Phoenix Foundry Bury, for the supply of a standard gauge "Premier" petrol-paraffin locomotive including equipment for running on paraffin, £755; Messrs. Robert Dempster and Sons, Ltd., Rose Mount Ironworks, Elland, Yorkshire, for the supply and erection of ash handling plant, travelling crane and grab, £3,180; Messrs. John Spencer, Ltd., Globe Tube and Engineering Works, Wednesbury, for the supply and erection of the boiler house steam and feed pipes, £8,230; Messrs. Mather and Platt, Ltd., Park Works, Manchester, for the supply and erection of two electrically driven boiler feed pumps, complete with motors and control gear, £3,522 17s.; Messrs. Mather and Platt, Ltd., Park Works Manchester, for the supply and erection of one steam driven feed pump, £804 16s.

One of the Lesser Ports of the Mersey.

One of the subsidiary ports of the river Mersey is Runcorn, which has six docks, and another, large enough for ships of 1,200 tons, at Weston, through which raw materials are brought for the Staffordshire Potteries (about 1,200,000 tons a year), and coal and salt exported. The Weaver Navigation takes ships of 500 tons, drawing 10-ft., 17 miles, to Northwich; a short canal, avoiding the tidal mouth of the river, connects at Weston Point with the Manchester Ship Canal, and so with the Bridgewater Canal. Southwards, the Trent and Mersey Canal runs through Nantwich to the Potteries and Birmingham. The Weaver has four locks with gates moved by turbines, 220-ft. long by 42 broad, through which 1,000 tons of goods can pass at one time. At Anderton, where the Trent and Mersey Canal runs close to the river, there is a lift by which vessels of 100 tons can be raised or lowered 50-ft. Two iron troughs, on cast-iron rams 3-ft. thick, weighing 240-tons each when full, counter-balance one another; six inches of water are taken from the lower one, and the upper one descends by its own weight, raising the lower.

French Admirers of Liverpool Dock Works.

About 50 members of the Association des Grands Ports Francais (Association of the Great Ports of France) visited Liverpool for two days to study the organisation of the port in order to ascertain what improvements might be beneficial to the installations and exploitations of the French maritime establishment. The visitors when they arrived at the Riverside Railway Station, Liverpool, were met by Mr. H. F. Fernie, Mr. Walter Harding, and Mr. L. A. P. Warner, C.B.E., representing the Mersey Docks and Harbour Board. They embarked on the Dock Board's tender "Galatea," and sailed up the river to view the south docks and oil installations, disembarking at the entrance to the Manchester Ship Canal to inspect the lock system there. The second's day programme included an inspection of the Liverpool north docks, particular attention being directed to the Gladstone docks and graving dock. The "Galatea" was again used for this inspection. Monsieur le Senateur Brindeau (vice-president de l'Association des Grands Ports Francais), speaking at a luncheon given in honour of the delegation, said some of his delegation had already visited Liverpool and others were there for the first time. When it was a question in France, in 1860, of inaugurating the great Transatlantic traffic and dock works for the reception of the first mail boat, it was upon Liverpool that their engineers turned their attention in order to construct a great dock of 36 metres width, similar to the Canada Dock, which at that time was the largest dock in Liverpool. When France was forming its first Transatlantic fleet they came to Liverpool and secured information as to the magnificent results obtained by the Cunard liners Persia and Scotia. Only recently when Paris was considering improving the facilities of their docks they invited Mr. William Brodie, a distinguished Liverpool engineer, to go across and advise them. They were very proud that Liverpool had an engineer who could not only supply the details but converse with them in their own language.

Col. Sir James P. Reynolds, Bt., M.P., D.S.O., said the gift of nature fashioned by the energy of its citizens, unlike the river ports of London, Glasgow and Newcastle, Liverpool was a port on an estuary of the sea. They owed their existence to nature's provision of that great lagoon in the south which acted as nature's dredger to keep open this great waterway on which all the ships of the world could come to anchor, and in order that they should meet the requirements of their time, the citizens of Liverpool, led by those eminent men that conducted the affairs of the Mersey Docks and Harbour Board, had lined the banks with docks which were able to give a peaceful serenity to those vessels.

Death of Salvage Expert.

Mr. John Gibney, of Wallasey, who died recently in his 88th year, was identified with salvage and diving work on the Mersey for over half a century. As a young man Mr. Gibney invested his savings in the purchase of several river gigs which he used for the purpose of tending upon the sailing ships. Subsequently he joined with two other partners in the work of salving anchors and chains in addition to small vessels which had come to grief in the river Mersey.

The three partners worked together on a share system by which they secured a large amount of work together, with valuable experience. After seven years of this partnership, Mr. Gibney commenced business on his own account in Chapel Street, Liverpool, and for thirty years successfully carried through a large number of diving and salvage operations, not only in various parts of the United Kingdom but in European countries. Before the Mersey Docks and Harbour Board acquired modern salvage plant and appliances, he was concerned almost exclusively with salvage and wreck-raising work on Merseyside. His firm, Messrs. John Gibney and Co., was some years ago converted into a limited company and is now carried on under the title of John Gibney, Junr., Ltd.

Mersey Dock Works to Proceed at Once.

The Unemployment Grants Committee has granted the application of the Mersey Docks and Harbour Board for financial assistance towards the following schemes:—(a) The substitution of five rolling bridges with machinery and foundations for existing bridges—four on the dock estate at Birkenhead and one on the dock estate at Liverpool; (b) The construction of wing walls to the Wallasey Pool passage, together with a dock extension on Vyner's land, to the existing West Float; (c) The reconstruction of the Clarence half-tide dock, etc.

These works will rank for grant on the following terms:—To meet an expenditure up to £295,000 on work A; £925,000 on work B; and £973,486 on work C (the estimated costs of carrying out the respective works) including 7½ per cent. in lieu of 15 per cent. for establishment charges in respect of the Board's portion of the work—namely, on any loans, raised as required, to meet approved expenditure, or on any allocation as required out of accumulated funds in the hands of the Authority, which they are legally entitled to use, and do use, towards approved capital expenditure:—100 per cent. of the interest up to May 31st, 1933, on such loans, or of the interest which accumulated funds so allocated and used, would otherwise have earned; 50 per cent. of the interest similarly for the remainder of a period not exceeding fifteen years, in respect of each such loan or allocation. The Board's engineer has now been instructed to put the schemes in hand at once.

Decline in Ship Canal Traffic.

According to the monthly approximate traffic return of the Manchester Ship Canal Company, issued on 16th May, there was a substantial decrease in the volume of traffic which used the Manchester Ship Canal during the month of April, the revenue being £98,773 as against £118,414 for April, 1929. The figures for the first four months of 1930 were £420,477, as against £454,741 for the corresponding period of 1929, representing a decline of £34,264.

The Humber Ports.

Accounts of the Humber Conservancy Commissioners.

THE accounts of the Humber Conservancy Commissioners for the past financial year are regarded as quite satisfactory. The ordinary receipts were £41,681, or £1,041 in excess of the preceding year, and this notwithstanding a reduction in the rates of shipping dues. A still further "cut" from 30 per cent. to 33.3 per cent. below the statutory maxima was made in the dues as from June 1st, 1929. Yet the actual increase in shipping dues over the previous twelve months was £563. In comparison, however, there would have been an increase on 1928 of £2,485 had the two last "cuts" not been made. The ordinary expenditure of the Board was £31,710, or £1,027 less than in the previous year. The annual report also stated that on January 15th, 1929, the Aire and Calder Navigation commenced the construction of a training wall on the river Trent and that at the end of the year it had been constructed for a distance of 700 yards from its commencement near Island House. This is part of the so-called " fish tail " at the confluence of the Trent and the Ouse which thus far has been carried out in the Humber Conservancy's jurisdiction. The maximum cost to be borne by the Conservancy is £70,000, of which nearly £22,000 has already been expended. The period specified by the Trent Falls Improvement Act for the completion of the " fish tail " will expire in a little over four years time.

Plans for New Dock at Grimsby.

At the April meeting of the Humber Conservancy Commissioners, a letter was read from the Board of Trade asking that the plans approved by the Conservancy Board for the proposed new dock at Grimsby might be amended in certain respects and pointing out that the site of the sewer outfall jetty and the site, shape and direction of the outfall channel differed from those shown on the plan. The letter asked for the observations of the Conservancy Board and the Grimsby Corporation with regard to these discrepancies and stated that in the meantime the Board of Trade would raise no objection to the Grimsby Corporation proceeding with the works on their own responsibility. It was decided to defer consideration of the matter pending the receipt of a reply from the Grimsby Corporation. A second letter from the Board of Trade reported that the Air Council had decided to abandon the proposed extension (except above low water mark) of the Donna Nook air gunnery and bombing range, but were very anxious to obtain the consent of the Board of Trade to the use of a certain area of foreshore to the north-west of Donna Nook Beacon and also to the use of an area of foreshore. In response to this the Conservancy Board have decided to offer no objection to the amended proposals, but do so only in deference to the wishes of the Board of Trade and the Air Council and on the understanding that no extension of the new areas will be made. The Conservancy Board gave approval to the Humber Pilots' Steam Cutter Co. of the tender of Earle's Shipbuilding and Engineering Co. for the building of a new pilots' cutter, and authority for the realisation of investments jointly held in the names of the Conservancy Board and the Cutter Co.

The Filling-in of Queen's Dock.

Accompanied by other officials, Mr. Thomas Hornsby, divisional general manager of the London and North Eastern Railway, has visited Hull and had a conference with the Queen's Dock Special Committee of the Hull Corporation with reference to the filling-in of the dock which has been purchased by the Corporation for £117,000. It is now proposed to take also some part of the Prince's Dock in connection with a scheme of street improvement. The Hull Chamber of Commerce and Shipping, in order to safeguard the trading and commercial interests of the port, have formally deposited a petition against the L. and N.E.R. Bill in the House of Lords. The points upon which the Chamber lay emphasis are the completion of the south-west "arm" of the King George Dock in order to provide additional water area; the removal of restrictions upon building on the site of the Queen's Dock and the provision of alternative accommodation for the traders and others disturbed.

Hull Docks and the Baltic Season.

The docks at Hull are only moderately busy, but with the near approach of the Baltic season much greater activity is anticipated. Humber importers have bought considerable quantities of Russian, Swedish and Finnish wood for f.o.w. and June shipment and the early cargoes will soon be arriving in some force. While imports of timber are thus far in excess of last year, there is a marked decrease in the arrivals of wheat and kindred cereals which at the beginning of May were 90,000 tons behind, and of oil seeds, nuts and kernels, which were upwards of 100,000 tons down. On the other hand the exports of coal foreign have kept up very well indeed, the returns for all the Humber ports for the first four months of the year showing an increase of 43,000 tons, the total being 1,780,509 tons, as against 1,737,335 tons. In addition the foreign exports from Boston and Lynn were 105,534 tons as against 134,699 tons.

Increase in Vessels entering Hull and Goole.

According to details given by the Hull and Goole Port Sanitary Authority, the number of vessels entering Hull and Goole from foreign ports during 1929 was 7,980, an increase of 636 on the previous year. The incidence of infectious disease on incoming vessels was less than the average of recent years and there were no cases of human plague, cholera, yellow fever or typhus. The number of aliens coming in or passing through the port was 7,136, against 7,401 in the previous year. No less than 19,638 persons travelled to Hull by sea and 379 to Goole, the outward passengers being 15,880 and 631 respectively. The expenditure of the Authority exceeded £5,000.

Improving the Port of Goole.

Important arrangements are in hand for improving the facilities of the port of Goole, as the outcome of a conference called by the Aire and Calder Navigation and attended by representatives of the shipping and commercial interests of Goole. The proceedings were private but it is understood that particular attention was given to recommendations made by Councillor T. E. Kettlewell. Better provision is to be made for the importation of timber and alterations are to be made regarding the berthing of ships, laid up vessels to be transferred to the Barge Dock. In their endeavour to speed up the port the Aire and Calder Navigation are receiving the support and co-operation of the London, Midland and Scottish Railway Company, whose vessels are large users of the port.

Annual Meeting of the Bridlington Harbour Commissioners.

At the annual meeting of the Bridlington (East Yorkshire) Harbour Commissioners, Dr. T. C. Jackson, of Hull, was elected Chairman, in succession to Mr. W. Hakes, on the proposition of Mr. S. Charlesworth seconded by Mr. Stonehouse. It was reported that over the past twelve months the income had been surely expanding. The receipts from all sources amounted to £2,034 and the expenditure to £1,892, which included £974 spent on the improvement of Bridlington Harbour. The credit balance at the end of the year was £530, as against £538 at the end of the previous period. In moving the adoption of the report of the Works Committee, Mr. Charlesworth said that for the projected improvement of the harbour permission had been received from the Ministry of Agriculture and Fisheries for tenders to be invited, the estimated cost of the new works being £11,500. Towards this the Government had made a grant of £7,000, while £1,000 would be taken from the reserve fund, leaving £3,500 to be found by the Commissioners. The erection of the new fish landing stage on the south pier would be tackled first. The summer holiday traffic of the harbour would not be interfered with. The works have to be completed by September 30th.

Wharf Walls in Tidal Waters ("The Dock and Harbour Authority," April, 1930).

The British Steel Piling Co., Ltd., state that arrangements were concluded by them last year enabling supplies of the Larssen pattern Steel Sheet Piling to be obtained from English Mills, and they claim that at the present time Larssen section piles are the strongest British manufactured piling in proportion to weight per square foot.

The Side-Groove Steel Piling Section is similar to the Universal Joist Piling manufactured by the British Steel Piling Co., and not the Simplex piling as stated in the article.

A Notable Bi-Centenary.

W. and T. Avery, Ltd., the well-known Midland firm of weighing machine and measuring-instrument manufacturers, whose bi-centenary falls this year, will hold a Commemoration extending over several days in July.

The precise details are not yet announced, but already many prominent people have promised to attend the celebration.

The firm is intimately connected with shipping and dock work generally, weighers of grain and coal in bulk being in use all over the world. They have installed weigh-bridges in many docks, and their machines are widely used for the testing of anchors, wire hawsers, cables and ropes.

Scottish Harbour Notes.

New Department for Port of Glasgow.

WITH a view to stimulating through publicity and organisation the trade of the Port of Glasgow, the Clyde Navigation Trustees have decided to establish a new department, to be known as the Trade Development Department. This new department will have as its chief Mr. Harold M. Ford, and its establishment has followed from Mr. Ford's successful activities as Clyde trade ambassador to Australia and New Zealand in the way of promoting direct shipping communication between Glasgow and these dominions. Mr. Ford has hitherto rendered yeoman service to the Clyde Navigation Trust in the capacity of Secretary, and—in order that he can give his undivided attention to the direction of the new department—he has been relieved of his former duties. During his recent tour throughout Australia and New Zealand, Mr. Ford was signally successful in his important and ambitious mission, and it is felt that the new Trade Development Department of the Clyde Navigation Trust will produce tangible results in due course.

Commenting on this matter at a recently held meeting of the Clyde Navigation Trust, the Chairman (Mr. James S. Craig) observed that this marked an important development in the Trust's policy. "Mr. Ford's recent tour," proceeded the speaker, "was remarkably well carried through both in New Zealand and Australia, and in consequence there has already been a large increase in the shipping from that part of the world to the River Clyde. This trade, indeed, has nearly doubled itself as compared with the average of the previous five years. This mission attracted considerable interest abroad and Mr. Ford has been cordially complimented on behalf of the Clyde Trustees on having so successfully undertaken it." It was also intimated that, since Mr. Ford's return, he had opened up trade between Australia and the Fruit Market of Glasgow and that, as a result of the negotiations in which the shipping companies were embraced, Glasgow was now taking a larger share than ever in the marketing of fruit from the Dominions.

Aberdeen Harbour and Unemployment Grant.

It is intimated that Aberdeen Harbour Commissioners have now received notification from the Unemployment Grants Committee of the grants to be given in connection with the works for the relief of unemployment which are to be carried out at the local harbour. These works include an important extension of the Commercial Quay; and the reconstruction of the western and eastern portions of the Albert Quay. With regard to the extension of Commercial Quay, the Minister of Labour has approved of a grant from the Exchequer funds as follows:—Fifty per cent. of the interest on approved expenditure out of loan not exceeding £15,500 to be raised to meet the cost, and the grant to be payable for fifteen years or for the period of the loan, whichever is the less. In connection with the reconstruction of the western and eastern portions of the Albert Quay—estimated to cost £136,100—the following works have been approved for grant:—(a) Reconstruction of Albert Quay (western portion), a wharf with two protection jetties on the south side of Albert Basin, £64,000; and (b) reconstruction of Albert Quay (eastern portion), a wharf with two protection jetties on the south side of Albert Basin, £72,000.

Grant for Leith Dock Commissioners.

At a recently held meeting of Leith Dock Commissioners intimation was made of the approval by the Minister of Labour of a grant for making a roadway to the fishing harbour at Newhaven, the cost of which will be £5,000. At the same meeting there was submitted a report by Mr. Alfred H. Roberts (Superintendent and Engineer) regarding the provision of new accommodation and facilities in substitution for those destroyed by the recent fire at the old grain warehouse; together with supplementary reports prepared by Mr. Roberts with special regard to the possibility of providing grain conveyors in a gallery from the east end of the Imperial Dock to the site of the old grain warehouse in case the Commissioners should decide to rebuild the new grain warehouse upon the old site, and at the same time make it possible to discharge vessels in the Imperial Dock. After discussion, it was decided to continue this matter for further consideration.

Harbour Improvements at Girvan.

Girvan Town Council have received intimation that a Government grant has been sanctioned for a scheme of local harbour improvements. This grant (amounting to £2,245) is for the reconstruction of the Fish Wharf and for the dredging of the harbour. Girvan Town Council submitted five sections of one scheme of harbour development to the Scottish Fishery Board and the Development Grants Committee:—(1) Dredging of the harbour; (2) reconstruction of the Fish Wharf; (3) the piling of "Scots Hole" to prevent boulders from slipping down into the channel of the harbour after dredging has been finished; (4) reconstruction of the breakwater; and (5) the surfacing of the North Wharf, which has subsided to a considerable extent. Three of the sections have been granted, and grants have been allocated. The harbour problem has caused considerable anxiety to the members of the local Town Council and their predecessors in office since the concern was taken over after the war from the territorial landlords and municipalised.

Improvements at Lochboisdale and Stornoway.

In connection with the scheme of improving the harbours in the Highlands and Islands a well-known Glasgow firm—Grays Ferro-Concrete Company—has secured a couple of important contracts. The first is for the reconstruction of the pier at Lochboisdale, in South Uish, which has been undertaken by the Parish Council with the assistance of the Board of Agriculture; while the second is at Stornoway, where the Pier and Harbour Commissioners have decided on the improvement and extension of the existing pier. The Commissioners, of course, have the backing of the Fishery Board for Scotland. The latter contract amounts to £2,800 and the former to nearly £9,000, and the two will require the services of a considerable body of workmen.

Satisfactory Progress with New Harbour at Nairn.

Steady and satisfactory progress is being made with the construction of a new harbour at Nairn, which, it is estimated, will take about three years to complete, with the total cost within the region of £47,000. So far favourable weather conditions have been experienced, though during the past month fairly heavy seas interfered somewhat with the advancement of the undertaking. A considerable amount of repair work has been done at the east pier, and, on the completion of this pier, the reconstruction of the outer end of the pier will be undertaken. As it is desirable that this part of the operation be completed during the summer months, this part of the work is being expedited. An early start is also to be made with the repair of the west pier.

Ardrossan Harbour Company have Satisfactory Year.

Presiding at the recently held annual meeting of the Ardrossan Harbour Company, the Chairman (Sir Alfred Read) observed that the actual results for the past year could not but be regarded as fairly satisfactory in view of the general depressed state of industry. The facilities of the port were being gradually improved (he added), over £25,000 having been spent on capital account during the year 1929 and £62,000 during the last eight months without having recourse to an issue of capital. The results for the first three months of 1930 showed that last year's figures were maintained. The prospects of the oil and asphalt industry were good, but the outlook in iron was not too certain. The company (it was mentioned) had given the whole of de-rating to necessitous trades.

Continued Protest against Filling-in West Harbour, Port Glasgow.

Port Glasgow boatmen and others constituting the "Protest Committee" continue their campaign against the local Town Council scheme of filling in the West Harbour to provide a recreation ground or open space. It would appear, however, that the protest will be of no avail, as at a recent meeting of the Council a letter was read from one of the large ratepayers in town undertaking to defray the cost of closing up of the entrance to the harbour and also to pay the ground annual of £125, which the Town Council are under agreement to pay the Harbour Trust. The Town Clerk also reported that this ratepayer had instructed a firm of engineers to prepare a plan showing the method of the closing up of the entrance. This plan had been approved by the Clyde Lighthouses Trust, and it is now proposed to accept the tender of £2,045 for the work of closing up the entrance. Alternative accommodation has been offered the boatmen.

Eyemouth Harbour Entrance Silting-up.

Much concern prevails at Eyemouth (on the Berwickshire coast) through the entrance to the local harbour having become badly silted up with sand through high seas, thus causing serious delay to vessels both on their arrival and departure. It is now intimated, however, that the local Harbour Trustees are preparing an important scheme for presentation to the Government, when they seek assistance for a new pier and new

Scottish Harbour Notes—continued.

harbour entrance. It is felt that this scheme would be of great assistance and benefit locally, and the hope is being expressed that the request for a Government grant towards this scheme will receive sympathetic and generous consideration.

New Constructions on Crinan Canal.

A goodly batch of workers have now started work on the construction of a lock near Cairnbaan to be used as a " feeder " to the Crinan Canal. New bridges across the waterway at Cairnbaan and Ardrishaig will also be built, as the present bridges are too light to cope with the heavy motor traffic of modern times. Among other contemplated improvements will be the erection of new workshops for the canal employees, and the construction of a new lock at Ardrishaig at the entrance of the canal. At present vessels can only enter the canal at certain states of the tide, and a new lock would enable them to enter at all tidal stages. It has been stated that the cost of the improvements at Ardrishaig will amount approximately to £75,000, and that they will take two years for completion. The construction of the Crinan Canal was commenced in the year 1793, and in an incomplete state was opened for traffic eight or nine years later.

Ceylon and Indian Notes.

Better Coast Lights.

IT will be remembered that a sum of Rs.40,000 was provided in the estimates for the financial year 1928-29 for automatic lights for Hambantota, Batticaloa, Round Island (Trincomalee), and Point Pedro, and Hood burner for Foul Point light (Trincomalee).

The amount unspent at the end of the financial year from this vote was Rs.38,322.91. Of this amount a sum of Rs.18,000 on account of the Point Pedro light has already been re-voted in the Estimates for 1929-30.

The Chairman, Colombo Port Commission, now reports that orders were placed with the Crown Agents for the Colonies early in October, 1928, for open type burner installations with accumulators, etc., and for a complete incandescent petroleum vapour installation in connection with the new lights at Hambantota, etc., and the Crown Agents for the Colonies were requested by cable to make delivery before September 30th, 1929, so that payment might be effected before the close of the financial year. A claim voucher for Rs.16,432.64 on account of the above was received in February, 1930, and it is anticipated that altogether a sum of Rs.20,000 will be required in the current financial year on this account. The Finance Committee of the Ceylon Legislative Council is accordingly invited to sanction a supplementary vote (re-vote) of Rs.20,000 for the purpose.

Galle Harbour.

The takings of soundings, preparatory to "sweeping" the bed of the Galle harbour, so as to locate rock obstructions, has been completed, and Mr. Ferdinands, of the Harbour Engineer's Department, and marine survey coolies have already come to Colombo. Other operations connected with the survey of the port have been suspended owing to the setting in of rough seas.

The survey is by way of a preliminary step towards determining what could be done eventually with the Southern port of Ceylon: that is, whether the construction of a breakwater is advisable and practicable, whether one is positively necessary, and also what dangerous rocks would have to go, so as to have a safely navigable channel and a few more commodious inner berths.

The reason why Galle harbour "went out of action" was owing to the comparatively shallow water and the increased size of ships. The bottom of the port is stated to be composed mainly of rock, and dredging for deepening would be no simple matter.

Inquiry has already been made as to the cost of deepening the harbour sufficiently to take in modern ships, which would also involve the building of a breakwater as shelter from the south-west monsoon swell. It has been estimated that such an undertaking would really not be far short of the cost of building Colombo harbour.

Ceylon Customs Returns.

The Customs returns for March this year afford an opportunity of comparison in the Island's trade between the first three months of 1930 with the corresponding period of 1929. The values of imports in the relative periods are:—

	1929 Rs.	1930 Rs.
January	37,904,689	34,459,270
February	35,312,337	26,803,119
March	34,503,434	27,699,617
Three Months' Total ...	107,720,460	88,962,006

The values of exports for the same periods are:—

	1929 Rs.	1930 Rs.
January	35,669,823	29,202,096
February	35,231,569	29,245,441
March	35,398,033	32,985,397
Three Months' Total ...	106,299,425	91,432,934

Thus the decreases during the first quarter of the current calendar year compared with the first quarter of 1929 are considerable, namely:—Imports, Rs.18,758,454; Exports, Rs.14,866,491.

It is to be noted, however, that an adverse trade balance of Rs.1,421,035 during the first quarter of 1929 has been turned into a favourable balance in the first quarter of the current year, the excess value of exports over imports being Rs.2,470,838.

Despite declining trade the revenue collected from Customs duties shows a useful increase. The total collections during the three months ended March, 1929, were:—Rs.13,350,351.71 as compared with Rs.13,626,374.88 in 1930, namely an increase of Rs.276,023.17.

The actual increase in the duty collected on petrol following the revised tariff was Rs.1,483,918 cts.46, but against this must be offset big falls in the revenue from import duties on cotton, grain, spirits, cordials and various other goods and from export duties on almost every commodity except rubber, tea and dessicated coconut.

The biggest proportion of the increase in revenue from Customs duties is thus supplied by the duties on imports, but there is also a slight increase in export revenue. The opposite figures are:—

	First Three Months of 1929	1930
Import Duties ...	10,546,770.73	10,803,051.69
Export Duties ...	2,786,838.12	2,815,334.98
Sundries	16,742.86	7,988.21
Total ...	13,350,351.71	13,626,374.88

It will be seen that import duties provide an increase of Rs.256,280 cts.96 and export duties of Rs.28,496 cts.86, the decrease under sundries making a net increase in revenue from the Customs tariff of Rs.276,023 cts.17.

Taking the collections from March separately, however, a considerable decrease is seen and this may, perhaps, be regarded as a pointer for succeeding months.

The total revenue collected from duties in March, 1930, was Rs.4,085,541 cts.19, compared with Rs.4,367,893 cts.23 in March last year—a drop of Rs.282,352 cts.4 in one month. This is accounted for by a substantial fall in the revenue from imports, for that collected from exports continue to show an increase. The decline in revenue from imports in March is all the more noticeable since the duty on kerosene oil and petrol provides a big increase, indicating that whereas the increased duty on these commodities has hitherto this year been able to offset the decline in revenue from other imports, it is no longer able to do so.

New Gunboat for Siam.

The new Siamese gun-boat "Sukhoyada," which was built in England, arrived in Colombo last week on her way out to her home port. The "Sukhoyada," which has been specially designed for river, estuary, and coastline patrol service, was launched from Messrs. Vickers Armstrongs' Naval Construction Works, Barrow, on November 19th last. Madame Nunkae Bahiddha, wife of the first Secretary of the Siamese Legation in London, performed the launching ceremony.

The "Sukhoyada" is a steel twin-screw ship with a length of 173-ft. She has armour belt of nickel steel fitted for her full length, with armour bulk-heads and screens. The upper deck is plated with heavy steel to afford protection against aerial attack. She will carry two 6-inch guns with the latest system of fire control. Ammunition will be carried to the guns by electrical power. The main propelling machinery consists of two sorts of inverted triple-expansion engines capable of developing 850 h.p., steam being supplied by two water tube boilers.

Ceylon and Indian Notes—continued.

Colombo Port Appointments.

The Crown Agents for the Colonies have selected Mr. H. J. Derby for appointment as driver in the Harbour Engineer's Department, to fill the vacancy caused by the promotion of Mr. W. E. Aplin to the post of general foreman, Harbour Engineer's Department. Mr. Derby has already assumed duties.

The Government of Ceylon has re-appointed the Hon. Mr. M. J. Cary to be an unofficial member of the Colombo Port Commission for the period beginning 21st April, 1930, to 28th February, 1931.

Port of Colombo in 1929.

The flags of sixteen countries were flown in Colombo Harbour in 1929, fourteen in 1928 and sixteen in 1927. The following are the statistics for 1929 and 1928:—

SHIPPING STATISTICS FOR 1929.

Nationality.	No. of Ships Merchantmen.	Total Tonnage.
British	1,964	12,723,142
German	307	2,231,306
Dutch	216	1,760 616
Japanese	177	1,248,974
French	158	1,129,223
Italian	141	947,108
Norwegian	108	336.707
American	67	536,340
Swedish	38	216,246
Danish	28	117,815
Spanish	7	29,190
Greek	6	30,346
Russian	5	11,164
Belgian	3	19,536
Jugo-Slav	1	5,226
Finnish	1	4,337
Sarawak	1	241
	*3,228	21,647,525

*These include both steam and motor ships.

Nationality.	Warships No. of Arrivals.	Tonnage.
British	62	234,076
French	3	37,420
Dutch	1	1,620
	66	273,116

Nationality.	Transports No. of Ships.	Tonnage.
British	9	82,601

SHIPPING STATISTICS FOR 1928.

Nationality.	No. of Ships Merchantmen.	Total Tonnage.
British	1,818	11,926,877
German	248	1,743,020
Dutch	198	1,512,660
Japanese	181	1,763,471
French	148	1,390,589
Italian	113	754,890
Norwegian	109	384,598
American	75	558,867
Swedish	38	214,468
Danish	15	73,932
Greek	10	45,537
Spanish	6	25,021
Belgian	5	30,207
Portuguese	2	7,257
	2,966	20,431,372

Nationality.	Warships No. of Arrivals.	Tonnage.
British	68	252,157
Dutch	2	3,150
German	1	2,500
Italian	1	2,400
Argentine	1	2,750
French	1	1,304
Siamese	1	750
Portuguese	1	1,757

Nationality.	Transports. No. of Arrivals.	Tonnage.
British	8	72,974
Portuguese	1	5,500

Canadian Notes.

The Welland Ship Canal.

The northern section of the new Welland Ship Canal was unofficially opened for traffic on April 21st, when the steamer, "Georgian," of the Northwest Transportation Company, entered Lock No. 1 from Port Weller at the Lake Ontario end of the canal. This event signalised the opening of three of the great lift locks of the new ship canal, the whole length of which is shortly to be placed in operation.

The new Welland Ship Canal has been under construction since 1913, except for the period during and immediately following the war, when construction work was almost entirely suspended.

With the section opened last year added to the locks now placed in commission, almost the whole length of the 25-mile canal is open for traffic. Boats entered both ends simultaneously with the opening of navigation for the 1930 season. The short section of the canal near the town of Thorold which still remains to be opened is, however, the most spectacular portion of the new canal, for it is here that the gigantic twin locks in flight are located. These locks, Nos. 4, 5 and 6, a pair to each number, are arranged so that ships may pass up and down simultaneously.

They are similar to the Gatun Locks on the Panama Canal, and together overcome a vertical height of 139½-ft. at the steeper part of the Niagara escarpment. A short distance above the flight locks is Lock No. 7, which gives the final lift up from Lake Ontario to the summit level, extending for 17 miles to Lake Erie. This level stretch is protected by the guard lock No. 8, which is the longest canal lock in the world, measuring 1,380-ft. between the inner gates. It is located at Humberstone, near the Lake Erie entrance to the canal.

The opening of three locks at the northern end of the canal eliminates ten of the locks on the old Welland Canal. Above Lock No. 3, vessels, for the present, must revert to the 14-foot channel of the old canal and ascend through the old locks to the summit level. The summit level of the ship canal from Thorold to Port Colborne, which is in part the old channel widened and deepened, is already in use. When the entire new canal is in use the journey from one end to the other will be made in about eight hours, as compared with more than double that length of time required for a vessel to pass through the old canal.

When the entire length of the new canal is in use in a few weeks' time, vessels will pass through seven lift locks instead of twenty-six as in the older waterway. The 270-ft. locks of the old canal will give place to the 800-ft. locks of the new; instead of a width of 45-ft., the new canal will be 80-ft. wide. When the full depth is attained in the new canal, the navigable depth will be 27-ft. instead of 14-ft. as formerly.

The official opening of the Welland Ship Canal has been fixed to take place on Dominion Day (July 1st). The event will be one of the most outstanding in the history of Canada, as the coming into operation of the canal will enable the large upper Great Lakes freighters to descend to Lake Ontario and to continue their passage unimpeded into the channel of the St. Lawrence River. In preparation for this new era in Canada's inland water transportation, new port facilities are under construction at Kingston and at Prescott, Ontario. These two ports are being equipped with large terminal grain elevators, docks and other facilities for the reception of the large lake steamers and the transfer of their cargoes to the smallers vessels able to pass through the existing St. Lawrence canals to the port of Montreal.

Among these steamers may be cited the s.s. " Lemoyne," which has a gross tonnage of 10,480, and is able to carry in her holds a cargo of 553,000 bushels of grain. The average cargo of grain carried by vessels passing through the old canal is in the neighbourhood of 98,000 bushels.

Grain Elevator at Churchill, Manitoba.

Tenders have been asked by the Dominion Department of Railways and Canals for the construction of the first grain elevator at Churchill, Man., the new sea port on Hudson Bay. The structure is to be provided with storage for 2,500,000 bushels of grain, and it is hoped it may be ready to handle the 1931 crop from the Prairie Provinces. By that time a portion of the deep water dock will have been constructed, so that it will be possible to load ocean ships at the elevator.

New Type of Vessel for Paper-carrying on the Great Lakes.

It is announced that the m.s. "Thorold," belonging to the Ontario Paper Company, is proceeding from Halifax to Montreal on its maiden trip from Fowey in Cornwall (England). The new vessel has been specially designed and is fitted with specially constructed Diesel engines for the Great Lakes service. The "Thorold" will be the first boat of her type on the Great Lakes propelled by this kind of machinery. Her auxiliary engines are also Diesels, and all deck machinery will be electrically controlled and operated. The m.s. "Thorold" will be used in carrying newsprint from the mills at Thorold, Ontario, on the Welland Ship Canal, to Chicago. The carrying capacity is 4,400 rolls of newsprint, and the vessel can be transformed at short notice into a type suitable for the grain or pulpwood carrying trade.

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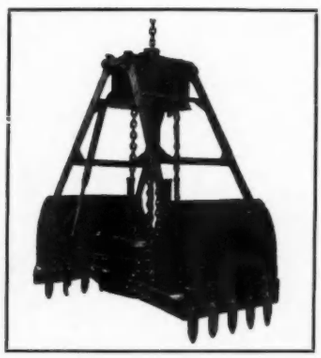

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Irish Harbour Matters.

Ballycastle Harbour Scheme Rejected.

MR. J. MILNE BARBOUR, Minister of Commerce in Northern Ireland, in reply to a deputation of the Antrim County Council, and of the Urban and District Councils of Ballycastle, regarding the provision of improved harbour facilities at Ballycastle, said that in conjunction with the Antrim County Council the Government had constructed a new landing pier on Rathlin Island, and on humanitarian grounds it was necessary that the complement to that should be provided at Ballycastle. This step, however, was delayed, pending the consideration of a major scheme of harbour development which had been advocated in certain quarters. The two schemes under consideration were:—

(a) the provision of a harbour at a cost of £35,000; and
(b) the provision of landing facilities suitable for the needs of the Rathlin islanders at a much smaller cost.

In the opinion of the Government's technical advisers, the major scheme from a technical standpoint was more worthy of support, but its adoption would require legislation which, in effect, would involve the re-imposition on agricultural lands and other hereditaments of a form of taxation of which they had recently been relieved by derating, and such a step could not be lightly undertaken.

On that account, Mr. Barbour said that he had come to the conclusion that steps should be taken forthwith to provide landing facilities for the Rathlin islanders, which would involve the adoption of the minor scheme which it is proposed should be undertaken jointly at the expense of the Government and the County Council.

Transporter Bridge for the Liffey.

The Dublin Port and Docks Board has lodged with the Local Government Department, for approval, the engineer's plans and estimate for the transporter bridge across the Liffey. Similar documents were also lodged with the Dublin County Council and the Dublin Corporation.

This is a legal obligation under the Dublin Bridges Act recently passed by the Free State Dail and Senate.

Mr. C. E. McGloughlin, Chairman of the Board, at a recent meeting said that comparisons had been made with a bridge in the United States, but the circumstances of the two undertakings were totally different. That, he thought, had been made quite clear at the Parliamentary Inquiry, and in proceeding with the transporter bridge project, the Board had acted in an open and straightforward manner. They had gone before a Parliamentary Committee and the time for making a protest had passed. The Board were bound now to do a certain thing, and the action of lodging the plans and estimate was the final step towards going on with the building of the bridge.

Mr. W. A. Hewat said that the Board had not taken this step under pressure, and he anticipated that the transporter bridge would be a great success in solving the traffic problem of the city.

Grain Cargoes at Dublin—Speeding-up Discharge.

The more rapid discharge of grain cargoes which has now been arranged for at Dublin Port should induce shipowners to use the Liffey more frequently. The rate of discharge set out in the River Plate and Australian Charter Forms has been increased to 600 tons per day for Dubiin and Belfast.

When the Ports and Harbours Tribunal held an inquiry into the working of the Port of Dublin in 1928, strong representations were made by witnesses on behalf of the Board as to the rate of discharge for grain cargoes at Dublin, which was fixed many years ago, when the modern methods of discharging were not in existence, at 450 tons per day, while the rate for Belfast was 500 tons per day. Evidence was also given of rapid discharge at various English ports.

Mr. C. E. McGloughlin, Chairman of the Dublin Port and Docks Board, points out that heretofore this was the only matter to which shipowners could take exception with regard to the despatch of vessels at the port of Dublin. The rate at which general cargoes are discharged at Dublin will also bear favourable comparisons with the best British ports. It is understood that negotiations are proceeding with regard to charters for Pacific and other ports.

As a further instance of improved and improving methods for discharging cargoes at Dublin, it may be mentioned that the Merchants Warehousing Co. are installing a portable up-to-date grain handling plant, capable of discharging direct from the ship's hold not only into the warehouse, but also into barges, railway wagons or lorries.

Rapid progress is being made with the reconstruction of Alexandra Wharf, which, when completed, will provide 1,400-ft. of berthage with a depth of 32-ft. at low water, which can be dredged to 35-ft. When the reconstruction of this wharf is completed, the question of the provision of modern transit sheds will be taken in hand.

Developing Cork Harbour.

Mr. Joseph Mullan, of the Ireland Corporation of America, has informed the Cork Harbour Board that his Corporation is prepared to design and build a harbour properly equipped for commercial purposes for a cost not exceeding £1,200,000, providing 2,500-ft. of wharf if borings indicate proper sub-soil conditions. If the Cork Harbour Board places the contract with his firm, Mr. Mullan says they are willing to carry out the work on a cost plus 10 per cent. basis, also meeting 50 per cent. of the cost of boring operations.

It is understood that the members of the Cork Harbour Board are not inclined to mortgage any possible development of their port on a problematical venture like that.

Commenting on this, Mr. Eugene Gayer, general manager to the Cork Harbour Board, said: "We are spending large sums of money in improving our harbour at present, and all our revenue, even though it is increasing, is required for this work. The Victoria Wharf, which is being constructed at a cost of £27,000, and our land reclamation work at Tivoli are only two instances of our efforts to meet immediate requirements."

A letter from Mr. James Daly, Shanakill, Cork, a shareholder of the Board, suggests that all shareholders' opinions should be taken before any definite action is taken by the Board. He asks for information as to how Mr. Mullan, of the Ireland Corporation of America, will raise the sum of £1,200,000 mentioned by him as the probable cost of the scheme. He objects to the suggested mortgage of the future revenue of the port.

Death of Mr. John F. Power, of Limerick.

In his 83rd year, on the 30th April, Mr. John F. Power, Secretary to the Limerick Harbour Board and Chamber of Commerce, died at his residence, Lifford House, Limerick. He had been Secretary to the Harbour Board for the past eighteen years, and was prominently identified with the commercial life of the city for over half a century. In his younger days he was a keen sportsman and for some years acted as Hon. Secretary to the Co. Limerick Hunt Committee. His father was Mr. John Power, a Limerick corn and coal merchant.

New British and Irish Steamer.

Having regard to the success of their new vessel, "Lady Meath," the British and Irish Steam Packet Co. are having plans prepared for a much larger vessel, built on similar lines to carry over 1,000 cattle and 2,000 sheep. This is a further indication of the company's intention to provide the most up-to-date transport facilities between Ireland and England for all classes of live stock.

Launches at Belfast.

The twenty thousand ton Union Castle liner "Warwick Castle" was launched from Messrs. Harland and Wolff's East Yard, Belfast, on the 30th April.

Messrs. Workman, Clark (1928) Ltd., successfully launched from their North Yard, Belfast, on the 29th April, the twin-screw motor ship "Taybank," built to the order of Messrs. Andrew Weir and Co., for their Bank Line services. This is the third of four motor ships which are at present under construction by Messrs. Workman, Clark for the same owners. Leading particulars of the "Taybank" are as follows:—Length 440-ft., beam 57-ft., depth 38-ft. 7-ins. This vessel is of the shelter deck type, and there are four large cargo holds, while the shelter t'ween decks have been insulated for the transport of refrigerated cargo of various kinds. Special tanks have been fitted for carrying oils.

The machinery to be installed also has been constructed by Messrs. Workman, Clark, and consists of a twin set of Sulzer type engines, each 5 cylinders; there is also a large donkey boiler.

Cork Harbour Commissioners.

By a two-to-one majority the Cork Harbour Commissioners have decided not to take any further action regarding the plans put forward by the Ireland Corporation of America for the development of the port of Cork. The proposed expenditure of two million pounds on the construction of piers, wharves, railways and warehouses, etc., at Cuskinny, a short distance from Queenstown (Cobh) was based on a problematical trade, the realisation of which would appear to be very remote.

A more urgent problem facing the Commissioners is the provision of further shipping accommodation at the quays of Cork City. The rapid progress of the Ford industry has taxed the resources of the Harbour Board, and in accepting the advice of their Chairman to concentrate on this aspect of their duties, the Commissioners are adopting a common sense attitude.

Jugoslavian and Grecian Port Matters.

ACCORDING to the latest statistics, shipping at Saloniki during the month of January, 1930, included the arrival of 124 steamers with 134,308 net registered tons and 96 sailing vessels with 2,061 net registered tons, and which were distributed at follows:—

	Ships.	Net Registered Tons.
Greek	65	37,701
Italian	28	36,470
American	6	17,573
British	8	14,015
German	5	7,935
Dutch	3	5,760
French	1	5,634
Russian	2	3,167
Turkish	1	2,650
Jugoslav	2	1,588
Norwegian	1	1,115
Roumanian ...	2	700
	124	134,308

The freight traffic included 52,502 tons of goods unloaded and 7,012 tons loaded, while the passenger trade included 1,845 passengers arrived and 1,412 passengers cleared. According to the latest reports, the Jugoslav Government has decided to evacuate the free zone at Saloniki, as it appears that the funds allowed for the exploitation of the zone are to be used for improving facilities at Jugoslav ports. In certain quarters it is considered that this report may conceal an effort of Jugoslavia to force Greece to grant permission for Jugoslav trains to circulate on the line between Gevglieli and Saloniki. The decrease of Swiss purchases of Greek wines have greatly reduced transit trade between Greece and Switzerland through Italian ports. The Deutsche Levant Linie und Orient Dienst have increased their services and have further decreased rates.

In connection with Near Eastern Ports, it may be interesting to quote the following figures regarding the maritime activity of Russian ports during 1929:—

	Exports Tons.	Imports Tons.
Odessa	183,746	171,991
Teodosia	109,605	1,610
Mariopol	820,231	419
Novorossisk ...	1,248,905	58,180
Poti	928,306	19,840
Batum	2,432,553	31,704
Vladivostok ...	240,280	52,288

During 1929, 4,750,000 tons of lumber, 3,640,000 tons of oil, 1,150,000 tons of coal, 900,000 tons of manganese, etc., have been exported from Russian ports. A new regular steamship service with fortnightly sailings has been commenced between Russian Black Sea and Adriatic ports. In connection with the development of Jugoslav ports, it is confirmed from a Jugoslav source that trade at Sussak has recently shown the following figures:—

	Imports. Centals of Goods.	Exports. Centals of Goods.
1926	909,115	1,190,300
1927	1,604,835	1,826,376
1928	2,110,761	2,803,748
1929	3,178,350	3,761,740

Among the chief items of trade, lumber and phosphates are as follows:—

	Phosphates.	Lumber.
1926 (Centals)	467,370	1,164,045
1927 ,,	925.098	1,776,324
1928 ,,	1,334,440	2,760,344
1929 ,,	1,409,250	3,425,260

The competition of American phosphates has considerably reduced imports from Algeria and Tunisia, and it would now appear, according to cables from the United States of America, that steps are to be taken to favour exports of phosphates from the Gulf ports in American ships. A lot has been written about the creation of two new steamship lines from Jugoslavia to Chile, and from Jugoslavia to Spain, but up to the present nothing has materialised, and the only correct information available is that the first steamer of the Société Générale des Transports Maritimes à Vapeur of Marseilles is due at Sussak in the course of the next few months to start a monthly passenger and freight service to Buenos Aires.

However, the situation is becoming more difficult from day to day as space is lacking, and the Jugoslav policy to increase trade at Sussak—in spite of the lack of facilities—while they have at their disposal ample quays in the port of Fiume, is making the calling of ships at this port very dangerous; and, as a recent case proves, when the s.s. "Ariosto," of the Società di Navigazione Adria, bound to London and Antwerp, was forced to anchor on the new quay at Sussak without any sheltering breakwater and during a recent storm would have been driven on to the rocks if tugs of the S.A.C.I.F., undertaking towage and salvage at Sussak, had not gone to her assistance. The income from the harbour dues at Sussak has reached 2,384,280 dinars in 1929, against 2,131,581 in 1928. The receipts for the port of Sussak, Sibenik, Split, Gruz, and Metkovich has shown an increase from 8,949,358 dinars to 9,395,702 dinars in 1929. Only receipts at Sibenik are showing a decrease of about 100,000 dinars. It is expected that receipts at Sussak will increase as soon as the Custom's warehouses, having a capacity of 53,472 cubic metres, are built on the Karageorgevich Quay at Sussak. The cost of these warehouses is to reach about 15 million dinars, and it would appear that the Jugoslav Minister for Commerce will finance these constructions. At Split, where the largest quantity of cement is exported, there is a lack of regular steamship services, and steamers calling there cannot find appropriate repairing facilities except the Marain shipbuilding yard. An oil pipe has been placed for discharging oil direct from ships into tanks located on the coast.

The main trouble at Dalmatian Jugoslav ports is the lack of quick railway communications between themselves and the leading industrial centres of Jugoslavia, which are all nearer to Trieste, Fiume and Sussak than to Split, Gruz, etc. On the other hand, it should be considered that Jugoslav maritime trade with overseas countries does not exceed 2,200,000 tons yearly, which is not sufficient to maintain independent and regular steamship services to all parts of the world. For this purpose, Jugoslav business quarters insist upon the opportunity of attracting to Jugoslav ports Czechoslovak and Roumanian trade. In connection with Czechoslovak trade, it is well known that Germany has a considerable interest in it, while it can hardly be thought that Roumanians are to favour Jugoslav ports while they must look after their own. From the Jugoslav side, the possibility of an understanding on the basis of an exchange of services has been anticipated; the Roumanians should use Jugoslav ports, and the Jugoslavs would use the Roumanian ports for the export of wheat, maize, etc., via Danube. For this purpose the opportunity of building a new direct railway from Roumania to Dalmatia is being considered, but these are only projects, as the necessary funds to put them into effect remain to be found. In the meantime, Jugoslavia has undertaken the construction of the railway from Kossovo to Kotor.

In the Balkan countries great interest is being shown on the question of increased charges on passengers landing and arriving in Egypt, where the following fees have been established lately:—500 milliemes on first-class passengers; 200 milliemes on second-class passengers; 100 milliemes on third-class passengers.

According to the decree of March 15th, 1930, goods unloaded and loaded at Egyptian ports after that date have to pay harbour charge corresponding to one-tenth of the import and export duty, with the exception of tobacco, on which 3 milliemes on each kilogramme of tobacco imported has to be paid.

The Roumanian State Steamship services have decided to reorganise their steamship connections between Roumanian ports and Egypt, and loans have been granted by the Bucharest Government for this purpose, while negotiations are being carried on with Poland, Bulgaria and Greece to secure the development of Polish trade to the Near East in transit through Roumania, Bulgaria and Saloniki, where the Jugoslav free zone would be transferred to Bulgaria. Negotiations are still going on between the four interested Governments, but nothing definite has been arrived at yet. However, it appears that the Greek Government has decided to allow Bulgaria the sea outlet in the Aegean, as contemplated in the Neuilly Treaty.

Motor Boat for Service at the Port of Antwerp.

His Majesty's Consul-General at Antwerp reports that the Antwerp Municipality is calling for tenders, to be presented in Belgium by the 5th June, 1930, for the construction and delivery of a steel motor boat fitted with a four-cylinder motor of 24 h.p.

Firms desirous of offering British-built boats can obtain further particulars of this call for tenders upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Reference number A.X.9570 should be quoted.

Proposed New Ferry.

The Altona Verkehrsgesellschaft (traffic company) contemplates the opening up of a harbour ferry service between Altona and Waltershof. The transport of vehicles, particularly motor lorries, is the chief object in view, and as the crossing will only take ten minutes, such a service would represent a considerable saving in time for this class of traffic, which is at present compelled to use the Elbe bridges and cover a distance of some 5 or 6 miles. Preliminary negotiations are in hand.